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ABSTRACT

A collection of papers on morphology in relation to other grammar components and on the morphology-syntax interface includes: "Locative Plural Forms in Classical Sanskrit" (Belinda Brodie); "On Explaining Morpheme Structure" (Donald G. Churma); "Lexical Relatedness, Head of a Word and the Misanalysis of Latin" (Brian D. Joseph and Rex E. Wallace); "Heads" (Arnold M. Zwicky); "Why -skI? A Study of Verbal Aspect in Conchucos Quechua" (Anne M. Stewart); "The Syntax-Phonology Boundary and Current Syntactic Theories" (Geoffrey K. Pullum and Arnold M. Zwicky); "'Reduced Words' in Highly Modular Theories: Yiddish Anarthrous Locatives Reexamined" (Arnold M. Zwicky); "Attachment of Articles and Prepositions in German: Simple Cliticization or Inflected Prepositions" (Erhard W. Hinrichs); "A Non-Endoclitic in Estonian" (Joel A. Nevis); "Clitics and Particles" (Arnold M. Zwicky); and "Five Morphemes in Finnish: Possessive Suffixes or Anaphoric Clitics" (Joel A. Nevis). (MSE)

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The Ohio State University

Working Papers in Linguistics # 29

Papers on Morphology

Edited by Arnold M. Zwicky and Rex E. Wallace

Papers by

Belinda L. Brodie, Donald G. Churma, Erhard W. Hinrichs
Brian D. Joseph, Joel A. Nevis, Anne M. Stewart
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Introduction

The papers in this volume all concern morphology. In particular, they treat the question of how a morphological component of grammar relates to other components, especially how morphology fits in 'between' syntax and phonology.

Several of these papers have been read at conferences, or will appear shortly in published volumes. Both the Joseph/Wallace and the Pullum/Zwicky papers were presented at the 1982 annual meeting of the Linguistic Society of America; portions of the Joseph/Wallace paper will be published in Linguistic Inquiry. Both the Hinrichs paper and Zwicky's paper on Yiddish were presented at the 1983 Indiana University of Pennsylvania Regional Conference on Linguistics, and are to appear in the proceedings of that conference. Brodie's paper was delivered at the 1983 Mid-America Conference on Linguistics, and will appear in the proceedings of that conference.

A.Z./R.W.

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Locative Plural Forms in Classical Sanskrit

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1. Introduction

In this paper, I will discuss juncture phenomena involving the locative plural case-ending in Classical Sanskrit. Alternative analyses will be presented and each analysis will be evaluated according to a model based on the Interface Model of Pullum and Zwicky (to appear). In this model, the grammar consists of a set of autonomous, interfacing, ordered components. The interface between the autonomous components is constrained so that a component may have access to the output of the previous component, but not to the input of that or any other component. The components are ordered with respect to one another, thus predicting that a rule of a component may feed or bleed, but not counterfeed or counterbleed, a rule of a following component.

Each component has as its input the output of the component ordered immediately before it. The type of structure serving as the input of a component will determine the types of domains over which the rules of the component may apply, as well as the types of conditions on the application of the rules that may obtain. In this model, the syntactic component feeds a component of cliticization rules, which then feeds the morphological component. The morphological component has access to surface syntactic structure after the rules of the cliticization component have applied. The domain of morphological rules is morpho-syntactic. The rules have morpheme-, word-, or (syntactic) phrase-level domains and may exhibit syntactic or morphological conditioning on their application. The morphological component consists of three subcomponents: the component of morpholexical rules (also known as allomorphy or morphological spell-out rules), the component of word-formation rules, and the component of morphophonemic rules. The output of the morphological component is a morpho-syntactic structure. Readjustment rules, ordered after the morphological component and before the phonological component, change this structure into one which expresses the domains relevant to the phonological component--syllable, phonological word, and phonological phrase. The phonological component consists of "processes", or automatic rules. In this model, the rules of the morphological component apply cyclically; then, after restructuring, the processes of the phonological component apply cyclically.

Throughout this paper, it will be assumed that boundary symbols do not play any role in the grammar and that the applicability of rules at particular junctures is determined solely by structural considerations (cf. Rotenberg 1978). For the sake of convenience, I will use the terms "word boundary" and "morpheme boundary", but they are to be understood as referring to particular structural configurations. I will refer to a "word boundary" between two lexical items if they are not immediately dominated by the same word-level lexical category node, and to a "morpheme boundary" between two lexical items if they are immediately dominated by the same word-level lexical category node. Along the lines of Rotenberg (1978), I will assume that the rules of each component are divided into subcomponents depending on their domains of application. Thus, the component of morphophonemic rules is further divided into three subcomponents: one consisting of morpheme-level rules, one consisting of word-level rules, and one consisting of phrase-level rules. The processes of the phonological component are divided into at least three components: one consisting of syllable-level processes, one consisting of (phonological) word-level processes, and one consisting of (phonological) phrase-level processes.

2. "Pāda" endings

In Classical Sanskrit, the seven case-endings in (1) have traditionally been termed "pāda" or "word" endings, because morphophonemic rules apply to stems and "pāda" endings as though they were separate words. Rules which apply between words (external sandhi rules) also apply between stems and their pāda endings. Rules which apply word-finally also apply stem-finally when the stem is followed by a pāda ending. The rule in (2), for example, applies between words, as in (3), and also between stems and pāda endings, as in (4).

(1)

bhyām	instrumental dual	bhis	instrumental plural
bhyām	dative dual	bhyas	dative plural
bhyām	ablative dual	bhyas	ablative plural
		su	locative plural

(2) $as \rightarrow o \ / \ \_\_\_\_ \ \#\# \begin{bmatrix} +\text{voi} \\ +\text{cons} \end{bmatrix}$

(3) /manas devasya/ → mano devasya
'mind' 'god'
nom. sg. / gen. sg.

(4) /manas--bhis/ → manobhis
'mind' instr. pl.

An adequate analysis of stems and pāda endings must account for the generalizations in (5) and (6).

(5) Rules which apply between words also apply between stems and their pāda endings.

(6) Rules which apply word-finally also apply stem-finally when the stem is followed by a pāda ending.

These generalizations can easily be accounted for by an analysis in which stems and their pāda endings are separated by a word boundary. Such an analysis would be adequate for any forms consisting of a stem and one of the six "pāda" endings beginning with *bh*, but seemingly inadequate for some locative plural forms. In some locative plural forms, a word-internal rule, the RUKI rule, has apparently applied across the juncture between the stem and ending. If the stem and ending were separated by a word boundary we would not expect the strictly word-internal RUKI rule to apply. It should be noted that the only forms which are problematic for an analysis in which stems and pāda endings are separated by a word boundary are those in which the RUKI rule has apparently applied. There are no cases in which an external sandhi rule or word-final rule fails to apply to the stem and ending as though separated by a word boundary. Even in the cases in which the RUKI rule has applied across the juncture between the stem and ending, external sandhi rules still apply to the stem and ending as though separated by a word boundary. Since the only problematic forms are locative plural forms, I will proceed by discussing the various types of locative plural forms and then consider alternative analyses of these forms.

3. Locative plural forms

The first type of locative plural forms which will be discussed are those which are not problematic for an analysis in which stems and the locative plural ending are separated by a word boundary. These forms can be derived by independently motivated rules if the stems are separated from the locative plural ending by a word boundary. Stems which fall into this category include some root consonant stems and some derived consonant stems.

The stem *dviṣ* will serve as an example of a root consonant stem of this category. The nominative singular, instrumental plural, and locative plural forms of *dviṣ* are given in (7). The nominative singular form is accounted for by the rule in (7a). The instrumental plural form is accounted for by (7a) and an independently motivated rule of regressive voicing assimilation. The locative plural forms would be accounted for by (7a) if we assume that the stem and ending are separated by a word boundary. Assuming that a word boundary separates the stem and ending explains why the word-internal rule in (7b), which applies across morpheme boundaries as in examples (8) and (9), does not apply to /dviṣ-su/. If the juncture between *dviṣ* and *su* were a morpheme boundary, instead of a word boundary, we would expect **dvikṣu*, not *dviṭsu*. To block the derivation of **dvikṣu* and to derive *dviṭsu* without positing any rules which are not independently motivated, it is crucial that *dviṣ* and *su* be separated by a word boundary, rather than a morpheme boundary, at least throughout part of the derivation.

(7) dviṣ 'enemy':
dviṭ nominative sg. a. ṣ → ṭ / ___##
dviḍ-bhis instrumental pl. b. ṣ → k / ___+ s
dviṭ-su locative pl.

(8) /dviṣ + si/ dvekṣi

(9) /dviṣ + sya + mi/ dvekṣyāmi

The stem *manas*, declined as in (10), is a derived consonant stem. The instrumental plural form results from the application of the external sandhi rule in (10a). The variant locative plural forms can be derived by independently motivated phrase level rules. I will not attempt to formulate the rule or rules, but it should be clear from (10b) that if the stem and ending are separated by a word boundary, then some phrase level rule or rules would apply to give the two locative plural forms.[1] If *manas* and *su* were separated by a morpheme boundary throughout the derivation, then it would be necessary to introduce a rule which optionally changes morpheme-final s to ḥ, which Whitney (1889:sec. 67) defines as "a voiceless h-sound uttered in the articulating position of the preceding vowel." However, this rule would be limited to morpheme-final s's before the locative plural ending, since, as in (11), other morpheme-final s's do not undergo such a rule. Thus, to derive the two locative plural forms of *manas* without adding an unmotivated rule to the grammar, it is necessary that the stem and ending be separated by a word boundary, at least throughout part of the derivation.

(10) manas 'mind':

manas	nominative sg.
mano-bhis	instrumental pl.
manas-su or manaḥ-su	locative pl.

a. $as \rightarrow o\ /\ \_\_\_\_\ \#\# \begin{bmatrix}+voi\\+cons\end{bmatrix}$

b. Before an initial s, ṣ, or ś, s is either assimilated, becoming the same sibilant, or it is changed into ḥ (visarga). (Whitney 1889:sec. 172)

e.g. manuḥ svayam or manus svayam
indraḥ śūraḥ or indraś śūraḥ
tāḥ ṣaṭ or tāṣ ṣaṭ

(11) /vas + sya + ti/ → vatsyati not *vaḥsyati

Other locative plural forms exhibit juncture phenomena identical to that which occurs word-internally between morphemes. If the stems and endings are separated by a morpheme boundary, these locative plural forms can be derived by independently motivated word level rules which apply between morphemes. The stems which fall into this category include some of the consonant stems and all vowel stems.

In examples of this type, the "RUKI" rule plays a crucial role. The RUKI rule is a word-internal rule which retroflexes an s when it is immediately preceded by "ruki" (i.e. r, syllabic r, k, or any vowel other than a or a:), unless the s is followed by an r. O'Bryan (1974) argued that the RUKI rule should be formalized with a morpheme boundary between the conditioning environment and the s. Such a formalization eliminates apparent exceptions to the rule, such as *kusuma* 'flower', in which no morpheme boundary exists between the non-retroflexed s and the conditioning element. She claimed that some surface ṣ's are derived from underlying ṣ's. The existence of underlying ṣ's in roots such as *kaṣ* 'scratch' is supported by forms in which the ṣ in a root is maintained even when an r follows. Kiparsky (1973) used the RUKI rule to support his claim that nonautomatic neutralization processes apply only to derived forms. He accounted for the cases covered by O'Bryan's rule as well as cases in which the retroflexed s is preceded by a "phonologically" derived RUKI (eg. *siṣṭa* from /sas + ta/) with a rule which retroflexes s after "ruki" in 'derived environments'. Hock (1979) claimed that Kiparsky's analysis does not account for all instances of ṣ predictably derived from underlying s, and amended Kiparsky's rule as in (12).

(12) s → ṣ / ruki ____

i) in non-roots
ii) root-finally in 'derived environments'
iii) root-initially after reduplication (with lexical and/or morphological restrictions)

This statement of the rule still eliminates the apparent exceptions that O'Bryan accounted for by her statement of the rule, because the exceptions are all within roots in nonderived environments. Zwicky (1970, and to appear) discusses the possibility that there is a process that retroflexes s after k and a rule which retroflexes s after the other conditioning elements. For the purposes of this paper, I will assume that the RUKI rule applies under the conditions given by Hock, and that at least for "rui" it is a morphophonemic rule, not a process.

In the derivation of the locative plural form vāk-ṣu, the RUKI rule has apparently applied to the s of su. For the RUKI rule to have applied, it is necessary that the stem and su be separated by a morpheme boundary, not a word boundary, at least at the point in the derivation when the RUKI rule applies. The locative plural form could be derived either by the application of the rule in (13a), followed by restructuring and the application of the RUKI rule, or by (13b) followed by the RUKI rule. Both (13a) and (13b) are independently motivated. The nominative singular form results from the application of rule (13a). The instrumental plural form results from the application of (13a) and the rule of regressive voicing assimilation mentioned earlier.

(13) vāc 'speech, word':

vāk	nominative sg.
vāg-bhis	instrumental pl.
vāk-ṣu	locative pl.

a. c → k /____##

b. c → k /____+ s

The stem diś is declined as in (14). This stem is one of four stems with final ś which exhibit alternations of the stem-final ś with k when the ś is word-final. All other stems ending in ś follow the external sandhi rule in (15). No historical or synchronic evidence suggests analyzing the four exceptional stems as having anything other than stem-final ś underlyingly. One way of accounting for the nominative singular form is to posit the word level morpholexical rule in (14a). The locative plural form could be derived by application of the independently motivated rule in (14b), followed by the application of the RUKI rule or by application of the morpholexical rule in (14a), restructuring, and then the RUKI rule.

(14) diś 'direction':

dik	nominative sg.
dig-bhis	instrumental pl.
dik-ṣu	locative pl.

a. word-level morpholexical rule:
morpheme # x: /dik/ before a word boundary
/diś/ elsewhere

b. $ś \rightarrow k / \_\_\_ + s$

(15) $ṣ, ś \rightarrow ṭ / \_\_\_ \#\#$

The only rule which applies in the derivations of locative plurals formed from stems ending in vowels is the RUKI rule. Thus, these forms could be derived if the stems and the locative plural marker are separated by a morpheme boundary throughout derivations.

In other locative plural forms, the word-internal RUKI rule apparently applies across the juncture between the stem and ending, but an external sandhi rule also applies at this juncture. The stems that fall into this category are the derived consonant stems ending in is and us. The stem havis, for example, is declined as in (16). The locative plural forms seem to have undergone the phrase level rules or processes in (16a) as well as the RUKI rule. The locative plural forms could be derived as shown in (17). All of the rules or processes which have applied in the derivation are independently motivated, assuming that the RUKI rule applies despite the intervening visarga. Whitney (1889:sec. 183) states that the RUKI rule applies "in the initial s of an ending after the final s of a stem, whether the latter be regarded as also changed to s or as converted into visarga." However, all of the examples of the RUKI rule which apply despite an intervening visarga involve the locative plural ending; s's before other s-initial endings, such as the future ending, do not become visarga, so that there are no other comparable cases, and it is not possible to find independent motivation for the claim that the RUKI rule applies despite an intervening visarga.[2]

(16) havis 'oblation':

havis	nominative sg.
havirbhis	instrumental pl.
haviḥṣu or haviṣṣu	locative plural

a. Before an initial s, ṣ, or ś, s is either assimilated, becoming the same sibilant, or it is changed into ḥ (visarga). (Whitney sec. 172)

4. Alternative analyses

In this section, I will discuss analyses of the locative plural forms which are compatible with the Interface Model outlined earlier. First, I will consider analyses which are in accord with the assumption that all occurrences of ṣu are predictable by the RUKI rule.

In (17) are given the derivations for the locative plural forms of havis in which the occurrence of ṣu is predictable by the RUKI rule and only independently motivated rules are employed. Note that any analysis which treats all cases of ṣu as predictable by the RUKI rule will require that the RUKI rule be formulated as applying across ḥ (visarga).

(17) /havis##su/ Rule (16a)
havis##su or haviḥ##su Restructuring
havis+su or haviḥ+su RUKI rule
haviṣ+su or haviḥ+ṣu Progressive Retroflex Assimilation
haviṣ+ṣu

It is necessary to determine when in this derivation restructuring occurs. If rule (16a) includes a phrase-level rule or rules, then restructuring is occurring within the morphological component between the subcomponent of phrase-level rules and the subcomponent of word-level rules. Such a derivation is inconsistent with any model, including the Interface Model, which assumes cyclic application of rules, since a phrase-level rule (rule (16a)) is feeding a word-level rule (the RUKI rule). If rule (16a) includes a phrase-level process, then the restructuring is occurring between the phonological component and the morphological component, and a process is feeding a rule. Such a derivation is inconsistent with the Interface Model and any other theory which claims that rules precedes processes. Ordering rules before processes makes the prediction that a phonological process may be in a counterfeeding or counterbleeding, but not a feeding or bleeding, relationship with a morphological rule. If rule (16a) includes a process, then it is in a feeding relationship with a rule (the RUKI rule), and the derivation is inconsistent with a "rules before processes" model.

Thus, whether rule (16a) is a process or rule (or a combination of the two) the derivation in (17) is inconsistent with the Interface Model. It is clear that the only type of derivation of the locative plural of havis compatible with the Interface Model is one in which neither a process nor a phrase-level rule feeds the RUKI rule. For this to be the case, the rule which changes the stem-final s to visarga would then have to be a rule, rather than a process, and word-level, rather than phrase-level. The rule in (16) which optionally changes s to visarga when followed by the locative plural ending would be required. (As noted earlier, s does not become visarga before other s-initial suffixes.)

(18) s → ḥ /____+locative plural marker

In the derivation in (19), rules are preceding processes and no higher-level rules or processes are feeding lower-level rules or processes. This derivation is, I believe, the only reasonable derivation which is consistent with the Interface Model and the assumption that all instances of su are derived by the RUKI rule.

(19) /havis+su/ Rule (16) (optional word-level rule)
havis+su or haviḥ+su RUKI rule (word-level rule)
haviṣ+su or haviḥ+ṣu Progressive Retroflex Assimilation
(word-level process)
haviṣ+ṣu

All vowel stems, some consonant stems, and stems ending in as, such as manas, can be derived in the same manner as the forms of havis without any further complication. In order to derive consonant stems ending in ṣ or ś, it will be necessaary to introduce a rule which changes ṣ or ś to ṭ word-internally before the locative plural ending, as in (20). This rule must bleed the rule in (21).

(20) ṣ, ś → ṭ /____+locative plural marker

(21) ṣ, ś → k /____+ s

Thus, if we are to derive locative plural forms in such a manner that all occurrences of *ṣu* result from the application of the RUKI rule, then it will be necessary to adopt two otherwise unmotivated morphophonemic rules (rules (18) and (20)). More important, an analysis in which stems and locative plural endings are separated by a morpheme boundary fails to capture the generalizations in (22) and (23), special cases of (5) and (6).

(22) Rules which apply between words also apply between stems and the locative plural ending.

(23) Rules which apply word-finally also apply stem-finally when the stem is followed by the locative plural ending.

In order to capture these generalizations, it is necessary to claim that a word boundary exists between stems and the locative plural ending. If it is assumed that a word-level lexical category node (Post-Position) immediately dominates the locative plural ending, and other pāda endings, a word boundary, as defined previously, exists between stems and their pāda endings, since the stems and pāda endings are not immediately dominated by the same lexical category node. An analysis in which pāda endings are analyzed as Post-Positions captures the generalizations in (22) and (23), as well as the broader generalizations in (5) and (6).

If such an analysis is adopted, the retroflexed s in forms such as *haviḥṣu* cannot be derived by the RUKI rule, since the RUKI rule does not apply across word boundaries. In order to derive *haviḥṣu* without adding an ad hoc rule which retroflexes the s across word boundaries just in these forms, it is necessary to posit *ṣu* underlyingly for these stems.

The claim that for some stems the underlying form of the locative plural ending is *ṣu* is supported by historical evidence. In Vedic, the RUKI rule applied variably across word boundaries, as well as word-internally. Even though the rule applied variably word-externally, Hock (1979:51) notes that "If we except certain apparent systematic exceptions ... we find that at least some instances of RUKI are found even in the least likely environments." Whitney (1889:sec. 188) cites the examples in (24) in which the RUKI rule has applied across word boundaries despite an intervening word-final visarga.

(24) yájuḥ ṣkannám
agníḥ ṣṭave
nákiḥ ṣáh

It is reasonable to assume that in Vedic locative plural forms of *is* and *us* stems were derived as in (25), and that, as the RUKI rule became nonproductive word-externally, the form of the locative plural ending for these stems was lexicalized as in (26).

(25)	havis##su	s → ḥ / ___##
	haviḥ##su	RUKI rule (word-external in Vedic)
	haviḥ##ṣu	

(26) locative plural marker: *ṣu* when the stem is one of the following: #x, #y, ...
su elsewhere

I have stated the distribution of the allomorphs of the locative plural ending in terms of individual stems for two reasons. First of all, I have found no other reason for identifying *is* and *us* stems as belonging to a morphological class separate from other stems. These stems are apparently in the same declension class as *as* stems, but *as* stems have the locative plural form *su*, not *ṣu*. Second, there are very few stems ending in *is* or *us*. Whitney (1889:sec. 412) states that "the stems in *as* are quite numerous, and mostly made with the suffix *as* ...; the others are few, and almost all made with the suffixes *is* and *us*." Because there are so few *is* and *us* stems, it seems reasonable to posit a morpholexical rule which refers to individual stems.

Assuming that a word-level process retroflexes s after k, it is not necessary to posit underlying *ṣu* for forms such as *dikṣu* and *vākṣu*. Forms such as *dikṣu* can be derived as in (27) by application of the morpholexical rule mentioned earlier, followed by restructuring between the morphological and phonological components and application of the process which retroflexes s after k. Forms such as *vākṣu* can be derived in the same way, as in (28).

(27)	dik##su	restructuring
	dik+su	s → ṣ /k ___
	dik+ṣu	

(28)	vāc##su	c → k /___##
	vāk##su	restructuring
	vāk+su	s → ṣ /k___
	vāk+ṣu	

The locative plural forms of all stems ending in consonants can be derived by independently motivated rules with the same steps in their derivations as for *vākṣu* and *dikṣu*.[3] The locative plural forms of stems in *as* will be derived as in (29). The forms of *is* and *us* stems will be derived as in (30).

(29)	manas##su	Rule (16a)
	manaḥ##su or manas##su	restructuring
	manaḥ+su or manas+su	no processes apply

(30)	havis##ṣu	Rule (16a)
	haviḥ##ṣu or haviṣ##ṣu	no processes apply

It is doubtful that locative plural forms of stems ending in vowels should be derived in the same way. There is no motivation for separating vowel stems and pāda endings by a word boundary, rather than morpheme boundary. Distinct treatments of consonant-stem and vowel-stem forms can be carried out if we assume that there is a morphological feature which distinguishes consonant stems from vowel stems. If such a feature can be motivated, then we can insure that the vowel stems are separated by a morpheme boundary, rather than a word boundary, by positing a rule of cliticization conditioned by the morphological feature distinguishing vowel stems from consonant stems.

4. Conclusion

In this paper, I have considered analyses of locative plural forms compatible with the Interface Model. It has been shown that an analysis in which all occurrences of *ṣu* are predictable by the RUKI rule will fail to capture the generalizations that rules which apply stem-finally before the locative plural ending are identical to rules which apply word-finally and rules which apply at the juncture between stems and endings are identical to rules which apply at the juncture between words. It has been shown that an analysis which does capture these generalizations must treat some instances of *ṣu* as lexicalized and seems to require distinct treatments of consonant and vowel stems.

Footnotes

*I wish to thank Brian Joseph, Adam King, and Arnold Zwicky for their comments on an earlier version of this paper.

[1] Kiparsky (1979:174) suggests that more general rules are applying here: "...we get a choice, before any voiceless consonant of either (preferably) ḥ, or else a fricative homorganic with the following consonant." One way of formalizing Whitney 172 is as an optional rule which changes s to ḥ word-finally before the voiceless consonants (except t and th) and a process which applies to word-final s's, assimilating them to a following fricative.

[2] Some verbal prefixes end in s (eg. *dus*, *nis*), but verb forms with verbal prefixes are probably best analyzed as having a word boundary between the prefix and root. An initial radical s after a prefix is not always treated the same as a stem-initial s (cf. Whitney (1889:sec. 185)).

[3] The locative plural forms of *ir* and *ur* stems, such as *girṣu*, are apparent exceptions to this analysis. Since the RUKI rule has apparently applied, it seems that there must be a morpheme boundary, not a word boundary, between these consonant stems and the ending when rules apply. However, if the *ṣu* is underlying, as for *is* and *us* stems, then they are no longer exceptional.

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On Explaining Morpheme Structure

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0. Introduction

In order to explain the existence of constraints on morpheme structure (henceforth CMSs),[1] early work in generative grammar (cf. Halle 1958, 1959, 1962; Chomsky 1964) posited a set of Morpheme Structure Rules (MSRs) which were of the same formal type as the other phonological rules of the grammar. Stanley (1967), after pointing out several problems with this kind of approach, proposed that the notion 'Morpheme Structure Rule' be banned from linguistic theory, and that it be replaced by a somewhat different formal construct, that of 'Morpheme Structure Condition' (MSC). Stanley allowed for three different kinds of MSCs, one of which (the 'If-Then' MSC) is, as he noted, a notational variant of the MSR; the others simply state whether a (sequence of) segment(s) satisfies a condition stated in either positive ('Positive' MSC) or negative ('Negative' MSC) terms.

More recently, Akers (1980) has argued for the incorporation of 'Admissibility Conditions' (ACs), which appear to be notational variants in many respects of Stanley's Positive MSCs, into linguistic theory, and Clements (1982) has proposed the adoption of 'Inadmissibility Conditions' (roughly the same as Stanley's Negative MSCs) as well. (The latter also argues that the 'Elsewhere Condition', which was originally proposed by Kiparsky (1973) as a constraint on the application of phonological rules, should be extended so that it governs the operation of CMSs.) Clements appears to be suggesting, moreover, that no equivalent of MSRs/If-Then MSCs is to be permitted. Kiparsky (1982), on the other hand, has argued in favor of the traditional MSR approach.

In this paper, I will present further arguments in favor of this latter kind of approach. After some brief remarks concerning Akers' approach, I will examine in some detail the analyses proposed by Clements, arguing that they provide no support for the AC approach or for the suggested extension of the Elsewhere Condition. Finally, I will consider briefly the relevance of data concerning the ways in which borrowed words can and cannot be nativized for choosing between the two types of approaches. The nativization data in fact provide evidence for a theory of MSRs that is considerably more restrictive than that advocated by Kiparsky, in that the set of possible MSRs is identical with the set of 'natural processes' (in the sense of Stampe (1973), Donegan and Stampe (1979))--a set which has a small finite number of members.

1. Against ACs

In addition to the arguments given by Stanley against the MSR approach, a number of further arguments have since appeared which are said to provide evidence against this framework. Since Kiparsky (1982) has, to my mind, successfully countered these arguments, I will concern myself only with the more recent admissibility approach of Akers and Clements.

While both Akers and Clements use the term 'Admissibility Condition', they appear to be using it in two quite different ways. Akers does not appear to intend that what he calls ACs be used to describe CMSs. Accounting for CMSs would apparently (though he never makes this explicit) require MSCs *in addition to* ACs. The latter function as a sort of filter on the application of a general, generative, rule that deletes all word-final consonants that are not permitted by the ACs. In this respect, they resemble very closely what Shibatani (1973) has called 'Surface Phonetic Constraints', although Akers confusingly compares his AC-based account with an If-Then MSC account. In any event, since they are not intended to describe CMSs, I will not consider them further here.

Clements, on the other hand clearly intends what he refers to as ACs to be used in accounting for CMSs. The essence of his argument is that adopting (a revision of) the Elsewhere Condition allows significant simplification in the statement of CMSs in at least two languages, Bobangi and Ngbaka. As Clements points out (p. 684), however, his argument depends on 'the assumption that [CMSs] are properly formulated as conditions of admissibility and inadmissibility', an assumption that he supports only by reference to Akers' work, where, as noted above, this term is used in a quite different fashion. I will argue here that the data discussed by Clements provide evidence, not for an extension of the domain of applicability of the Elsewhere Condition, but for a conception of CMSs other than that assumed by Clements--namely, the traditional MSR approach--in that much more revealing (in the case of Ngbaka, strikingly so) accounts of these data are possible within such a framework.

1.1. The Bobangi case

Clements' first illustration of the putative benefits of extending the Elsewhere Condition involves the formalization of a statement in Guthrie (1967, 46) concerning vowel cooccurrence restrictions in Bobangi. Guthrie's description (diacritics omitted) is as follows:

> (1) In position V_1 in this language there is a simple distinction of seven vowels, a/e/ɛ/i/o/ɔ/u. In position V_2 however there are a number of limitations according to the quality of V_1. Thus when V_1 is *a*, *e*, *i*, *o*, or *u*, we find only a/e/i/o/u as V_2, i.e. a distinction of five qualities only. When however V_1 is *ɛ* or *ɔ* in that case there are four distinct qualities only occurring as V_2, ɛ/i/ɔ/u.

Clements then gives (pp. 682-3) the following 'more succinct restatement', and then a reformulation of this restatement, of Guthrie's version:

> (2) The vowels *ɛ*, *ɔ* may not cooccur in a nominal stem with the vowels *i*, *u*, *e*, *o*, *a*, except that *ɛ*, *ɔ* may be followed by *i*, *u*.

> (3) In noun stems, the vowels *ɛ*, *ɔ* may be followed by *i*, *u*; otherwise ('elsewhere') *ɛ*, *ɔ* may not cooccur with *i*, *u*, *e*, *o*, *a*.

Clements' formalization of these constraints is as follows:

(4) $$\begin{bmatrix}\text{-high}\\ \text{-advanced tongue root}\\ \text{-low}\end{bmatrix} C_0 \;[\text{+high}] \qquad \text{is admissible}$$

(5) $$\begin{bmatrix}\text{-high}\\ \text{-advanced}\\ \text{tongue root}\\ \text{-low}\end{bmatrix} C_0 \quad \begin{matrix}\alpha\text{advanced}\\ \text{tongue root}\\ -\alpha\text{low}\end{matrix} \qquad \text{is inadmissible}$$
mirror image

The incompatibility of these conditions, Clements suggests, can be overridden by appealing to the Elsewhere Condition, which he gives in the following form:

(6) Two adjacent rules of the form
A ---> B / P__Q
C ---> D / R__S

are disjunctively ordered if and only if:

a. the set of strings that fit PAQ is a subset of the set of strings that fit RCS, and
b. the structural changes of the two rules are either identical or incompatible.

The disjunctive ordering imposed by (6) prevents (5) from being applied after (4) has applied, since the structural changes involved (i.e., none) are in fact identical.

Clements' treatment does indeed express the Bobangi facts reasonably succinctly. But one might still want to know why the inadmissible sequences are not permitted. What does having opposite values for the features [low] and [advanced tongue root] (hereafter, [ATR]) have to do with anything? And why are segements so specified incompatible with nonadvanced mid vowels? Fortunately, these questions do not require answers, since they are, I will argue, simply artifacts of Clements' analysis. Note first of all that, if we ignore the facts concerning a, these constraints suggest a restricted vowel harmony system with respect to ATR of the type that, according to Greenberg (1963), was present in Proto-Bantu, and of roughly the type found in numerous other African languages (cf., for example, Stewart (1967), Clements (1974, 1981)): mid vowels must agree with the preceding vowel with respect to ATR.

Further evidence for this way of viewing the matter is that affixes with mid vowels show the alternations expected in a vowel harmony system of this type. As Whitehead (1899, 6) puts it:

> (7) In the construction of a word [ɛ and ɔ] utterly refuse to be mixed up with [e and o]. Hence it will be found that the formative prefixes for nouns and formative suffixes for verbs must be made to harmonize with [these vowels].

Thus, for example, we find *molendandalo* 'a duty,' but *mɔyɔtwanganɔ* 'a writhing' (where *mV* is a noun class prefix).

As for the *a* problem, it is not clear that it exists, given the second form just cited, since *ɔ* follows *a*. However, since the post-prefix stretch in this case is likely to be morphologically complex (especially in view of its length, which is quite atypical of Bantu morphemes), and since the vast majority of Bobangi morphemes, as far as I can tell from Whitehead's examples and discussion (Guthrie does not offer any data in support of his claim), do obey the *a* constraint, this issue deserves some attention. What could cause a [-ATR] *a* to cooccur only with [+ATR] vowels (and itself)? Note that this is an especially curious state of affairs in a language that, as we have seen, requires mid vowels to agree in ATRness. One answer is that *a* is (or was, historically) converted to something else when in the environment of a [-ATR] vowel. Guthrie's comparative evidence (p. 46) supports this approach, as do the synchronic alternations in Bɔ/Bankon (cf. Spellenberg 1922), which appears to be fairly closely related to Bobangi (cf. Guthrie (1971)). Forms like *mɔyɔtwanganɔ* suggest that this process is no longer active synchronically in the language, so it is probably best to treat the (near?) lack of occurrence of *a* with [-ATR] vowels in morpheme-internal contexts as an accidental gap from a synchronic perspective.

If so, then the following statement accurately characterizes the structure of Bobangi nominals with respect to the vowel cooccurrence restrictions:

(8) If V_1 is not low and V_2 is mid, then these vowels must agree with respect to ATR; otherwise, any pair of vowels in the language may cooccur.

If we make the usual assumption that anything not prohibited by a MSR is permitted, the following MSR is all that is necessary to characterize the Bobangi constraints:

(9) $$\begin{bmatrix}\text{-high}\\ \text{-low}\end{bmatrix} \longrightarrow [\alpha\text{ATR}] \;/\; \begin{bmatrix}\text{-low}\\ \alpha\text{ATR}\end{bmatrix} C_0 \_\_\_$$

Nothing needs to be said about the occurrence of [+ATR] high vowels after [-ATR] vowels, since these are the only high vowels in the language; that is, Bobangi has the following segment structure constraint (cf. Stanley 1967), some version of which would be necessary regardless of the approach adopted:

(10) $$[\text{+high}] \longrightarrow [\text{+ATR}]$$

If it should turn out that the *a* constraint is still alive (e.g., if loan words are nativized so as to conform to it), then the following mirror image rule would also be necessary:

(11) $$V \longrightarrow [\text{-low}] \;//\; \begin{bmatrix}\text{-low}\\ \text{-ATR}\end{bmatrix} C_0 \_\_\_$$

That is, low vowels do not occur in the environment of nonlow, nonadvanced (hence mid) vowels.

It is possible to, in effect, mimic these rules within an admissibility framework. The conditions required are the following:

(12) $\begin{bmatrix}-\text{low}\\ \alpha\text{ATR}\end{bmatrix} C_o \begin{bmatrix}-\text{high}\\ -\text{low}\\ -\alpha\text{ATR}\end{bmatrix}$ is inadmissible

(13) $\begin{bmatrix}-\text{low}\\ -\text{ATR}\end{bmatrix} C_o$ [+low] is inadmissible
mirror image

Note that this account requires no appeal to the Elsewhere Condition. It is also simpler than Clements' account in terms of feature-counting, and an investigator who is familiar with vowel harmony systems found in African languages would probably be able to guess why the constraint in (12) holds, and perhaps why (13) does. But surely an account that does not require such guessing in order to understand the structure of the language (e.g., the MSR account just sketched) is to be preferred. Furthermore, a slight change in the formulation of (9) can account for the (bidirectional) vowel harmony across morpheme boundaries pointed out above:[2]

(9') $\begin{bmatrix}-\text{high}\\ -\text{low}\end{bmatrix}$ ---> [αATR] // $\begin{bmatrix}-\text{high}\\ -\text{low}\\ \alpha\text{ATR}\end{bmatrix}$ ___

It is also worth pointing out that the admissibility approach makes no prediction concerning how loan words will be nativized, whereas (9') predicts that mid vowels will assimilate to adjacent mid vowels with respect to [ATR], and (10) predicts that a will be raised in the environment of nonadvanced mid vowels.[3] While there appears to be no information available concerning the treatment of loan words in Bobangi, evidence from loan phonology in other languages (see section 2 below) indicates that the MSR approach is superior in this respect to the admissibility approach.

1.2. The Ngbaka case

Let us now turn to the Ngbaka data. Clements cites Wescott (1965) as giving the following characterization of vowel cooccurrence restrictions in this language (which has the same seven-vowel system as Bobangi):[4]

(14) If a disyllabic word contains /i/, it does not also contain /u/; if /e/, it does not also contain /ɔ/, /ɛ/, or /o/; if /u/, it does not also contain /i/; if /o/, it does not also contain /e/, /ɛ/, or /ɔ/; and if /ɔ/, it does not also contain /ɛ/, /e/ or /o/.

That is, Clements states (p. 684), 'in bisyllabic words containing no low vowel /a/, either the vowels are identical or they differ in height.' After rightly rejecting the extremely suspicious analysis proposed by

Chomsky and Halle (1968), Clements suggests the following conditions, which are governed by the Elsewhere Condition:

(15) $\underset{1}{\begin{bmatrix} \text{V} \\ \text{-low} \end{bmatrix}} \; \underset{2}{C_o} \; \underset{3}{\begin{bmatrix} \text{V} \\ \text{-low} \end{bmatrix}}$ is admissible

Condition: 1 = 3

(16) $\begin{bmatrix} \alpha\text{high} \\ \text{-low} \end{bmatrix} \; C_o \; \begin{bmatrix} \alpha\text{high} \\ \text{-low} \end{bmatrix}$ is inadmissible

Again, these conditions accurately characterize the restrictions in question. And again, one is left wondering why (16) should exist (although the existence of (15)—or a generalized version of it—is not at all surprising). Why is this language so unhappy with (non-low) vowels of the same height? The answer is, again, that we are dealing with a system of vowel harmony (not 'disharmony,' as (14) and (16) suggest). Thus, Clements' two conditions can be replaced by the following single MSR:

(17)

$$\begin{bmatrix} \alpha\text{high} \\ \text{-low} \end{bmatrix} \longrightarrow \begin{bmatrix} \beta\text{back} \\ \gamma\text{ATR} \end{bmatrix} \Big/ \begin{bmatrix} \alpha\text{high} \\ \beta\text{back} \\ \gamma\text{ATR} \\ \text{-low} \end{bmatrix} C_o \; \_\_$$

That is, a nonlow vowel that agrees with respect to the feature [high] with the preceding vowel harmonizes with it with respect to all features. Thomas (1963,62) agrees with the spirit of this account, as she states that '...il y a dans cette langue une forte tendance a l'harmonie vocalique'.[5]

It must be admitted that the analysis just suggested requires the use of a greater number of features than Clements' proposal and it might be argued that the simplicity metric would therefore require adoption of the latter. However, as is well known (cf., for example, Chomsky and Halle (1968)), such a device can be reasonably applied only to analyses framed within the same theory. We do not have such a situation here, since the MSR theory does not allow conditions on admissibilty and inadmissibility, while the condition theory would not (I presume, although Clements does state this explicitly) allow MSRs. Even within a theory that allows both kinds of ways of accounting for CMSs, however, rule (17) should be chosen over (15) and (16), I would maintain.

Note first of all that it is not at all clear that the condition required in (15) should be cost-free. Neither is it obvious that specifications of admissibility/inadmissibility come at no cost. Furthermore, it appears that (15) would not be allowed by any reasonable evaluation measure (and certainly not by any I have seen proposed), since there is a more general version which is equally compatible with the Ngbaka data, namely one which states that any sequence of identical vowels (not just nonlow ones) is admissible:

(15') $\underset{1}{V} \; \underset{2}{C_o} \; \underset{3}{V}$ is admissible

Condition: 1 = 3

With this simplified version, however, the required subset relation called for by the Elsewhere Condition is not met, and so (15') and (16) should apply conjunctively—an impossibility, given that they make partially incompatible statements. That is, the requirement that the vowels in (15) be nonlow is a purely ad hoc one, needed solely to insure that the Elsewhere Condition will be applicable. Thus, the analysis incorporating (15) and (16), though 'simpler' than that employing (17), is in fact ruled out on grounds of simplicity, unless perhaps one can come up with an evaluation measure that is somehow sensitive to the exigencies of the Elsewhere Condition in situations such as this.

But cannot an account analogous to the MSR account be framed within the admissibility approach? One might suggest the following:

(18) $$\begin{bmatrix}-\text{low}\\ \alpha\text{high}\\ \beta\text{back}\\ \gamma\text{ATR}\end{bmatrix} C_0 \begin{bmatrix}-\text{low}\\ \alpha\text{high}\\ \beta\text{back}\\ \gamma\text{ATR}\end{bmatrix} \text{ is admissible}$$

While this condition does in fact characterize some admissible sequences in the language, it does not characterize all of them (the low vowel can cooccur with any vowel), and it says nothing about what is inadmissible. Moreover, changing this to an admissibility condition along the lines of the reanalysis of (12) and (13) is not possible in this case. What is inadmissible here is nonlow vowels of the same height that do not agree with respect to either [ATR] or [back]. Such a condition cannot be expressed without recourse to either Boolean conditions of the type that, as Clements points out (p. 684), do not appear to be otherwise required, or a disjunction such as that given below, which is generally taken as an indication that the relevant generalization has been missed (cf. Newmeyer 1980):

(18') $$\begin{bmatrix}-\text{low}\\ \alpha\text{high}\\ \beta\text{back}\\ \gamma\text{ATR}\end{bmatrix} C_0 \begin{bmatrix}-\text{low}\\ \alpha\text{high}\\ \left\{\begin{matrix}-\beta\text{back}\\ -\gamma\text{ATR}\end{matrix}\right\}\end{bmatrix} \text{ is inadmissible}$$

Even if such formulations were permitted, moreover, no explanation would be provided for the inadmissibility of the inadmissible sequences (although again one familiar with vowel harmony systems might be able to guess the reason).

Thus, the Ngbaka facts discussed so far can be expressed in a revealing fashion, as far as I can tell, only within an MSR framework. In addition, the admissibility approach makes essentially no predictions about the treatment of loan words, which do in fact tend to harmonize, as noted above (see section 2 for further discussion of the general relevance of loan phonology).

A CMS not mentioned by Wescott[5] provides further evidence against the admissibility approach to the treatment of Ngbaka CMSs. Ngbaka is claimed by Thomas (1963, 63) to have the following CMS in addition to those discussed above:

(19) u does not cooccur with o or ɔ.

Within an MSR approach, this is just a further instance of vowel harmony, although the rule required in order to account for this CMS can apparently be only clumsily collapsed formally with (17). The separate rule required is, however, an extremely simple one (but cf. note 5):

(20) $[+\text{round}] \dashrightarrow [\alpha\text{high}] \;/\; [\alpha\text{high}]\; C_o \;\_\_\_$

Within the admissibility approach, it would also seem to be all but impossible to incorporate the facts in (19) into the existing rules. Presumably the simplest treatment would add the following:[7]

(21) $\begin{bmatrix}+\text{round}\\ \alpha\text{high}\end{bmatrix} C_o \begin{bmatrix}+\text{round}\\ -\alpha\text{high}\end{bmatrix}$ is inadmissible

This condition, which would be disjunctively ordered with respect to (16) by the Elsewhere Condition, is subject to all the criticisms made of the other conditions. In additon, its relationship to the other (putative) inadmissibility condition in the language is far from clear, since while in (16) vowels that agree in height are disallowed, here it is (rounded) vowels that disagree with respect to this same feature that are inadmissible. These facts thus appear to lend considerable support to the MSR approach.

Thus, the facts concerning Bobangi and Ngbaka by no means force one to weaken the Elsewhere Condition in the manner advocated by Clements, since alternative--and more revealing--accounts of these facts can be given. Moreover, these facts provide no evidence that the admissibility approach is to be preferred over the MSR approach; rather, assuming the relative undesirability of having disjunctions in rules, the Ngbaka facts—even if only those facts mentioned by Wescott are considered--suggest that just the opposite is in fact the case. And if the constraint in (19) holds, it seems to me, the case against the admissibility approach is overwhelming.

2. In favor of MSRs

It has been argued in a number of studies that the facts of loan phonology in Japanese and in Miami Cuban Spanish provide strong support for David Stampe's theory (see especially Stampe (1973), Donegan and Stampe (1979) of 'natural phonology' (cf. Ohso 1971, Lovins 1973, 1974, Bjarkman 1976)). To the evidence adduced in these studies, I would like to add some evidence from English. The English evidence is especially compelling, since it involves not only actual nativizations, but (intuitions about) impossible nativizations.

2.1. The English case

In English, */šl/ and */sr/ do not occur initially in native morphemes; /sl/ and /šr/, on the other hand, occur freely.[8] Since there is no evidence from morphophonemic alternations for a phonological rule involving such sequences, and since it would therefore appear to be arbitrary to choose either the first or second segment as the one which is 'changed' in a generative MSR, one might propose that this constraint should be stated in terms of a static MSC. Perhaps the most obvious candidate is the following, where the AC formalism is employed:

(22)
$$\# \begin{bmatrix}+\text{continuant}\\ +\text{strident}\\ \alpha\text{anterior}\end{bmatrix} \begin{bmatrix}+\text{vocalic}\\ +\text{consonantal}\\ \alpha\text{lateral}\end{bmatrix} \text{ is inadmissible}$$

Insofar as this condition (or *any* (in)admissibility condition) makes any predictions at all with respect to loan phonology, it implies that the impermissible sequences will be adjusted by altering either of the segments in question (presumably as little as possible). But the behavior of loan words in English suggests otherwise. *Sri Lanka*, for example, which has as a source an initial /sr/, is pronounced by most English speakers with /šr/; the alternative suggested by (22)--changing the second segment so that it is [+lateral] (i.e., /l/)--has been rejected as a possible nativization of this form by all of the speakers (more than twenty) I have consulted. Similarly, if a foreign item with initial /šl/ is to be nativized by altering one of these segments, only one nativization is possible. *Schlitz*, for example, is pronounced by many speakers with initial /sl/, but no one has */šr/, and speakers again reject this as a possible nativization when it is suggested to them.

There are, of course, other possibilities. One is to simply not nativize a form at all. Another is to avoid the problem by inserting an epenthetic schwa to break up the offending cluster, thus making the original process unnecessary by bleeding it. An interesting example where three different strategies are found involves the surname *Schlichter*, a name much in the news recently due to the fact that one of its bearers, an ex-OSU football star, was involved in a gambling scandal. While many newscasters pronounce this name with an initial /sl/, Mr. Schlichter himself has /šəl/, and others, including myself, have what is presumably the 'correct' pronunciation with /šl/. (In this case, it seems likely that the epenthesis rule is being used for a functional reason--to avoid changing the initial /š/, which is apparently felt by Mr. Schlichter to be an important part of the name, to /s/ by the process applied by the nativizing newscasters; see below for a statement of this process.) What is *not* found is /šr/. More importantly, it *could not* be found--such a sequence is not a possible way of nativizing *initial /šl/*.

Since only one set of segments can be changed in such cases, it appears that an MSR approach is required in order to account for these nativization facts; the MSR analogue of (22) is:

(23)
$$\begin{bmatrix}+\text{continuant}\\ +\text{strident}\end{bmatrix} \text{ ---> } [\alpha\text{anterior}] \;/\; \# \_\_\_ \begin{bmatrix}+\text{vocalic}\\ +\text{consonantal}\\ -\alpha\text{lateral}\end{bmatrix}$$ [9]

The thoroughgoing directionality in nativizations (and impossible nativizations) such as these simply cannot be accounted for within a static condition-based approach.

In a sense, it is unfortunate that recourse must be made to 'external evidence' of this type, for it seems clear that the child does not have access to such evidence when developing his/her phonological system. Insofar as we cannot predict the system acquired solely on the basis of the kind of evidence available to the child, there can be no explanation of how language acquisition is achieved in this area; that is, to use Chomsky's (1964, 1965) terminology, we would not have an explanatorily adequate theory of morpheme structure. But if the child brings to phonological acquisition more than just a data processing ability--in particular, if the child 'knows' that CMSs are expressed by means of MSRs--then the child is not in as bad a position as the linguist, who has no way of knowing a priori that the MSR approach is in fact required. I therefore propose that a universal principle to this effect be incorporated into phonological theory:

(24) All CMSs must be expressed in terms of MSRs.

Even this is not enough to guarantee that child will (as all English-speaking children apparently do, in view of the above discussion) learn rule (23) rather than a rule that alters the second segment in such sequences, or one of numerous imaginable alternatives such as deleting one of the segments in question. Note that operations analogous to these latter impossible alternatives are in fact found when other kinds of sequences are involved: *s* + voiced stop clusters that arise due to casual speech simplifications are altered by devoicing the stop, as in [sko] for *Let's go* (cf. Stampe 1973), whereas loan words which begin with a stop-initial cluster lose their first member (*pterodactyl*, *pneumonia*). That is, the following MSRs (given in very rough form) are operative:

(25) a. [-sonorant] ---> [-voiced] / #*s* ___

b. [-continuant] ---> Ø / # ___ C

We now have two further MSRs whose acquisition seems puzzling, since here again there appears to be no good reason why these rules should take the form that they do, rather than any of the numerous alternatives. The only reasonable answer, it seems to me, is that we are asking the wrong question. These CMSs are *not* acquired, but rather are, like other Stampean 'natural processes', innate; what is involved in (the natural part of) phonological acquisition is not learning the rules of the language, but suppressing the processes that are not operative. Thus, for example, while English requires that successful learners suppress the natural process that devoices final obstruents, it does not require suppression of the rules in (23) and (25), and the effects of these latent processes show up clearly if we look in the right places. Similarly, final devoicing need not be suppressed when acquiring, say, German, and its effects are also seen in the areas of loan phonology and 'foreign accent' (as well as in the phonology proper). That is, English speakers did not learn (23) and (25)--they simply did not, because the language they were learning did not force them to, *un*learn them.

2.2. *General consideration*

If the above CMSs are the result of the operation of unsuppressed natural processes, then it is not unreasonable to suppose that *all* CMSs that are synchronically valid (and not just the essentially accidental effect of the occurrence of one or more historical changes) have a similar explanation. That is, it appears that (24) can be strengthened, as follows:

(24') All (synchronically valid) CMSs must be expressed in terms of natural processes.

The attribution of innate constructs may be found unpalatable by some, especially when they are as specific as they are in this case. One might also question the conclusion reached on the grounds that the data involved are of an 'external' type, and that they moreover involve, at least in part, 'nonempirical' intuitions. But when the intuitions in question are as unanimous as they are in this case, it seems clear that they require an explanation of some kind. Given the lack of plausible alternative explanations--and I at least cannot even begin to think of one--the present proposal is what one must be driven to. In fact, I feel, use could profitably be made of intuitions about impossible occurrences in other types of external evidence such as language games (cf. Churma 1979, ch. 5). One of Chomsky's greatest contributions to linguistics, in my view, is his heavy reliance on 'impossibility' data in syntax (i.e., ungrammaticality data), despite the fact that, as Baker (1979) has pointed out, this kind of impossibility data is not, for the most part, available to the learner. But this does not mean that we should abandon the use of ungrammaticality judgments in syntactic research; the child has a big head start over us, and we need to make use of every piece of relevant data we can find just to discover the nature of the system acquired by the child--let alone explain how this system is acquired. This is no less true in phonology (or morphology or any other part of the linguistic system) than it is in syntax.

Since it seems clear that we have as yet only a rudimentary knowledge of what is contained in the set of natural processes, it is perhaps worthwhile to consider briefly the possibility of the existence of more general universal principles which, though not the ultimate explanation (for this is the responsibility of the individual processes themselves), might serve both as a basis for a somewhat different way of understanding the existence of the innate processes and as a partial heuristic for doing phonological analysis. To this end, I suggest the following, which can be considered to be inductively supported by the above discussion:

(26) a. There are no natural processes of vowel dissimilation (or their notational equivalent), either in the area of morpheme structure or elsewhere in phonology.[10]

b. Greek letter variables may not be used to pair different feature specifications in a natural process.

Assuming that all of the above discussion is concerned with natural processes (and cf. (24') above), the first of these metaconstraints would prohibit the use of rule (16), and the second, which is essentially equivalent to the claim that such variables may be used only in rules of assimilation and dissimilation, would disallow (5) and (19) (and (22)--cf. note 7) and various other suspicious analyses, such as that of Rood (1975), where alpha variables are employed to characterize the class consisting of /s/ and /?/ in a simple ('natural') fashion. Any regularity that appears to require violation of one of these constraints, I would maintain, is either an accidental one or can be expressed in more revealing fashion within a different framework--as was seen to be the case in the examples considered here.[11]

These constraints clearly leave us a long way from a complete, explanatory, theory of (the acquisition of) phonology. We need further elaboration of the universals in question, and there is still an immense amount of work to be done simply in discovering the nature of the phonological systems acquired by children. In this latter area, it seems to me, various kinds of 'external' evidence, such as nativization facts, will be of critical importance--recall that there was no language-internal basis for preferring the MSR theory over the admissibility theory in the English example. (See Zwicky (1975) for a survey of other kinds of 'external' evidence, and Churma (1979) for critical discussion of some of these.) But, even though we may lack knowledge concerning the nature of the systems we are attempting to describe and explain, we must not attempt to make a virtue out of our ignorance by proposing theoretical frameworks that require only 'internal' evidence (such as a static MSC framework) in order to arrive at a unique--but clearly incorrect, in the light of 'external' evidence--account of a given phenomenon.

Footnotes

[*] I would like to thank Rob Fox, Ilse Lehiste, Wayne Redenbarger, David Stampe, and Arnold Zwicky for helpful discussion of some of the issues raised here.

[1] It has been questioned (cf., for example, Clayton 1976) whether the level of the morpheme is that at which the phonological constraints in question should be stated. While it seems clear that in many cases it is not, it seems equally clear that there are genuine cases of constraints on the phonological structure of *morphemes*, including some of those to be discussed below. It should be kept in mind, however, that while I will continue to use the traditional term here for all cases, it is not always accurate, in that it is the structure of the syllable or the word that is in question. For further discussion, cf. Kenstowicz and Kisseberth (1977).

[2] I am assuming that vowel harmony is to be treated segmentally, and not autosegmentally or metrically; for arguments to this effect, see Anderson (1980, 1982a) and Singler (1983).

[3] Rule (9') does not disallow *ɛ* and *ɔ* when preceded by *i* or *u*, contrary to what the facts are said to be by Guthrie. It is not clear that these sequences are in fact prohibited (Whitehead makes no mention of this, and Proto-Bantu--cf. Greenberg (1963)--did allow such sequences), so it is also unclear whether it would be necessary to retain (9) and provide a separate rule for intermorphemic vowel harmony. It should also be pointed out that neither version of the rule in question predicts which of a pair of mid vowels that disagree with respect to ATR will change in loan words. If there is a tendency for one set of vowels to 'dominate' the other, then this rule will have to be altered by substituting the 'dominant' feature value for the alphas.

Rule (10) as stated yields as an output a nonoccurring segment in Bobangi (a mid back unrounded vowel, assuming that *a* is [+back]). It would thus presumably have to be altered (given that the raising rule yields *ɛ* in the environment of *ɛ*) by adding [-back] specifications in the appropriate places. The presumed roundedness of the output in the environment of would be accounted for by an independently required rule that makes nonlow vowels agree in backness and roundness. I leave this rule in its present form to facilitate comparison with the static admissibility approach, which does not even predict which vowel in an inadmissible sequence will change.

[4] The cited passage is taken from Clements, who apparently took it from Chomsky and Halle (1968, 387), rather than directly from Wescott's review, since both citations lack a clause present in the original: '...if /ɛ/, it does not also contain /ɔ/, /e/, or /o/...' (Wescott (1965,346)). This omission is not crucial, since, as Clements notes, this clause follows from the others present in the cited passage. Wescott himself made a more important omission of one of Thomas' claimed CMSs (see below for discussion). It is unfortunate that so much theoretical work based on Ngbaka has depended on second- and third-hand (partial) data.

[5] Nothing in the data or in Thomas' description implies the directionality specified by the MSR given, but of course the MSR framework requires such a directionality. An obvious kind of 'external evidence' to examine with respect to whether this necessity is good or bad is loan phonology, especially since Thomas (1963,62) points out that 'les emprunts' provide an 'illustration de cette tendance' [toward vowel harmony--DGC]. Unfortunately, she gives only one example of a nativization, which makes it difficult to say with any certainty what is indicated by such data. However, the single example given is in fact consistent with the directionality entailed by (17). Thus, while French *régler* is rendered as *lagele* by 'les Ngbaka lettrés' (Thomas (1963,62)), most speakers have *lɛkɛlɛ*. If we assume that there was an *ɛ* as the initial vowel in the source of this borrowing (presumably a *finite* form of the verb), then assimilation proceedes in the direction required. The presence of initial *a* in the alternative pronunciation is something of a puzzle, although it could be the result of some kind of folk etymology, whereby the initial syllable was taken to be the feminine definite article or object pronoun. In any event, it would clearly be desirable if further nativization data could be brought to bear on this issue.

[6] Perhaps the reason for Wescott's failure to mention this putative constraint is the fact that Thomas (1963,63n.) cites seven apparent counterexamples to it. However, she also points out apparent counterexamples to each of the other constraints reported by Wescott, suggesting in each case reasons for their failure to obey the constraint in question. Although she offers no explanation for the forms in question, it is clear that at least some of them are susceptible to the same kind of argument as that given for the 'quelques rares mots' (no examples given) that violate the constraint against *o-e* and *ɔ-ɛ* sequences--that there are '...plusieurs composes probables: *noms* d'animaux, de plantes et de parties de corps' (Thomas (1963,62n.). It seems clear to me that Thomas, at least, considers the constraint in (19) to be every bit as legitimate as the others she presents; and Wescott of course presents no arguments that it is not.

[7] It is possible to 'simplify' (21) by leaving out the specifications for height (or roundness) and adding the following:

(i) $\underset{1}{[+\text{round}]}\ \underset{2}{C_0}\ \underset{3}{[+\text{round}]}$ is admissible

Condition: 1 = 3

This rule would be disjunctively ordered with respect to the revised version of (21) by the Elsewhere Condition, and would correctly specify that the only rounded vowels that can cooccur are those that are identical. The repetition of the same condition found in (15), however, is suspicious, and one might suggest that (i) and (15) should be collapsed. It does not appear that there is a reasonable way of doing so. Perhaps the most attractive proposal—that (i) and (15) should be replaced by an admissibility condition that permits any sequence of identical vowels—fails for the reasons discussed above (i.e., it fails to stand in the required 'elsewhere' relationship with (16) and (21), and so does not enforce the necessary disjunctivity).

[8] Clements and Keyser (1981) treat /šl/ (and /šw/) clusters as being on a par with /šr/ clusters—all of them being acceptable, with forms such as *schwa* and *Schlesinger* cited as evidence. (They also point out that, at least for some speakers, even more /š/-initial clusters are possible; cf., for example, *shtick*, *schmalz*, *strudel*, and *Strauss*.) As Algeo (1978) has pointed out, researchers do not always agree about which clusters are permissible in English, and he discusses a number of possible reasons for this disagreement (cf. also Clements and Keyser (1981, 30)). It seems clear that the disagreement in the case at hand is due to dialectal/idiolectal differences (with speakers who disallow /šl/ clusters apparently being in the majority—cf., for example, Whorf (1940), Hill (1958), Hockett (1958), Langacker (1972), Selkirk (1982)). I have no doubt that speakers such as those alluded to by Clements and Keyser exist (I am, for the most part, one of them), but it is equally undeniable that speakers of the type traditionally described exist, given that they nativize the offending clusters. (Evidence from slips of the tongue, where forms such as *shreudian flip*, for *Freudian slip*—cf. Langacker (1972,247)—are reported, also indicates that the the constraint against */sr/ is quite strict for such speakers.) It appears, moreover, that Clements/Keyser-type speakers are somewhat avant-garde, linguistically speaking; only linguists and others who are hyper-aware of the actual pronunciations of foreign words can survive the psychophysiological torture required to produce the non-native clusters in question.

[9] This is probably not correct, since I know of no phonetic reason why sounds that disagree with respect to the features [anterior] and [lateral] should be so incompatible. Since [r] is, at least in my speech, [-anterior] (and cf. also Hill (1958,41), who describes the articulation of American [r] as involving 'the bunching of the tongue in the mid-mouth...'—presumably a [-anterior] articulation; he also implies that the other variety frequently described 'in older books', in which the tongue tip 'is turned upward and backward toward the roof of the mouth'—[+anterior]—is less common), while [l] is [+anterior], it is tempting to treat the phenomenon in question as an instance of assimilation with respect to the feature [anterior]; one would simply replace '[-αlateral]' in the environment of (22) by '[αanterior].' However, retroflexion of *s* in the environment of *r*-like sounds appears to be quite a common phenomenon, and the *rs* in question need not be [-anterior]. This occurs, for example, in

Sanskrit (where r is presumably dental or alveolar) as part of the well-known 'ruki' rule, and in Swedish, where the r is a dental trill. (I am indebted to Ilse Lehiste for bringing the Swedish facts to my attention.) The optimal, explanatory, version of (23) must thus await further investigation.

[10] If diphthongs are considered as being composed of two vowels, this claim will have to be weakened somewhat, since dissimilation of the parts of diphthongs appears to be quite common (cf. Donegan 1978).

[11] It might be suggested that these constraints be extended so that they refer, not only to natural processes, but to all phonological rules. However, it seems clear that sequences of historical changes can result in alternations that should be characterized in terms of rules (not natural processes) that are quite 'crazy' (cf. Bach and Harms 1972) or 'not natural' (Anderson (1982b)). Thus, Woleian (Sohn 1971) and related languages have a synchronic rule of vowel dissimilation which appears to be the result of a sequence of (natural) sound changes which can no longer be considered part of the synchronic system of these languages.

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Lexical Relatedness, Head of a Word, and the Misanalysis of Latin*

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0. Introduction

Two opposing schools of thought concerning divisions within the realm of morphology can be discerned in the general linguistic and morphological literature. One is represented by the work of a good many structuralist (American and European) scholars and is characterized in part by a recognition of a difference between inflectional morphology and derivational morphology. A classic work such as Bloomfield (1933) as well as more recent works such as Anderson (1982) or Zwicky & Pullum (1983) are representative of this tradition.[1] The second 'tradition' (to use the term loosely, to be sure), represented by the work of some (but not all, witness Anderson and Pullum & Zwicky as above) followers of certain camps within the generative transformational school of linguistics, is characterized in part by an opposing view concerning derivational and inflectional morphology; in particular, no distinction is recognized between two such aspects of morphology. A representative work in this camp is Halle (1973).[2]

The issue is clearly an important one, for there are real differences in morpheme types which motivated the traditional derivational/inflectional distinction in the first place (e.g. derivational morphemes tend to be 'inner' while inflectional morphemes tend to be 'outer'); if no distinction between two types of morphemes is posited, however, some other means must be found for predicting morpheme behavior. Williams (1981) purports to do just that, so that his work can be placed squarely within the latter camp described above. Williams' arguments, therefore, need to be considered carefully, for his justification of the basic premise of the 'Halle (et al.)' school of morphological analysis (no inflectional/derivational distinction) is only as strong as his ability to account for the recurring differential behavior of certain morpheme types.

Williams thus is concerned with a number of issues connected with this central question of a putative difference between derivational and inflectional morphology. In the course of his discussion, he develops two crucial terms, related and head, whose definitions we give below in (1) since they figure so prominently both in Williams' discussion and in our critique of his work.[3]

(1) a. head (of a word): the righthand member of a morphologically complex word is the head. (248)
    b. related: X is related to Y if Y is the result of removing the head of X. (260)

Secondarily, Williams develops a 'theory of the paradigm' and applies his principles to an analysis of the Latin nominal and verbal system.

Some problems with Williams' analysis have already been pointed out, e.g. by Strauss (1982) and Churma (1983).[4] However, much more can and should be said, for it can be shown that Williams' theory and his analysis are flawed from both a methodological and an empirical standpoint. Accordingly, it can be concluded that his conclusion that 'as far as the rules of formation go, there is no difference between derivational morphology and inflectional morphology' (283), the basic tenet of the second school of morphological thought noted above, cannot be regarded as demonstrated by Williams' argumentation.

1. Heads and headlessness--universality?

Williams' starting point for his discussion of morphology and word formation is affixation, which he defines formally as:

(2) $X \Longrightarrow \overset{\frown}{X\ Af}$ or $\overset{\frown}{Af\ X}$

e.g. $((\overset{\frown}{\text{blue ish}})\ \text{ness})$

An obvious question that arises at this point is: What about nonaffixation morphology, i.e.,[5] word formation processes such as those that give the relationships in (3)?

(3)

breath	<--->	breathe
life	<--->	live
bath	<--->	bathe
$(\text{push up})_V$	<--->	$(\text{push up})_N$[6]
permit_V	<--->	permit_N

Williams says that these can be accounted for by a class of rules he calls 'headless' rules, for they do not involve a 'head' in the sense he develops. Affixation morphology, on the one hand, necessarily does involve a 'head' in Williams' sense, inasmuch as there is branching in the internal structure of the word (Af + X / X + Af) and thus a right-hand branch to define a head.

Thus, for Williams, headless derivations as in (3) are systematically different from the 'headed' formations of affixally determined categories and forms. According to Williams 'headless rules always give rise to exocentric structures' (250). For the items cited by Williams (247) this claim is true. There are however other English formations not mentioned by Williams which do not involve right-hand (RH) branching elements and so must be considered 'headless'. Among these are ablauting verb formations like sang (sing), drove (drive), ran (run), found (find), etc. It is difficult to see what definition of exocentricity can be summoned forth to allow one to meaningfully call these ablauting verb formations 'exocentric'.[7] Thus headless rules which figure in the formation of grammatical categories (especially 'inflectional' categories as opposed to what would be traditionally labelled 'derivational' processes), such as those involved in the inflection of ablauting verbs in English, show that the properties Williams assigns to headless rules are wrong.

Moreover, formations like sang (sing) in English appear in all crucial respects (e.g. function) to be parallel to affixation types, e.g. picked (*pick*). If 'headless' formations differ systematically from 'headed' ones we might expect this difference to reside in the features characteristic of 'headness', i.e. we might expect 'headless' formations (since they do not have RH branching structure) not to possess features characteristic of a head. And yet formations like *sang* (*sing*) possess the feature which Williams uses to determine the head of English past tense formations: tense (250-251). It only follows that if *sang* (*sing*) possesses the feature *tense*, which is the criterion for determining head, then *sang* (*sing*) has a head. It just so happens that in this case the head feature is realized not as a right hand element, i.e. as a suffix, but as a simultaneous element.

In fact the simultaneous realization of what are for Williams head features is common among the languages of the world. Numerous good examples are to be found among African languages. For example, Nida (1949: 63) reports that in Ngbaka, a Sudanic language, 'there are four principal forms of every verb' marked by different tonal configurations on the same segmental base: these tone differences 'indicate four principal tense-aspect contrasts':[8]

(4) Ngbaka tense-aspect contrasts:

a. 'to clean' wà wā wǎ wá

b. 'to return' kpòlò kpōlō kpòló kpóló

Similarly, in Maasai, nominal cases are marked by tonal shifts (cf. Tucker and Mpaayei (1955), cited in Perlmutter (1982: 308)):

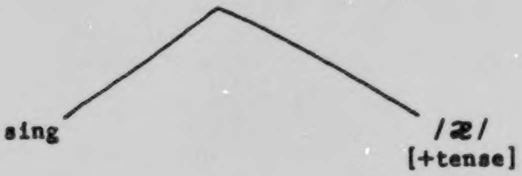
(5) a. e-dol embartá
3-see horse/NOM
'The horse sees him.'

b. e-dol embártá
e-see horse/ACC
'He sees the horse.'

Just as English ablaut past tense forms parallel suffixed past tenses, these Ngbaka verb categories and the Maasai case categories seem to correspond in all relevant characteristics to the verbal and nominal categories of a language like Latin (which figures so prominently in Williams' discussion) in which tenses and cases are marked by affixes, specifically suffixes.

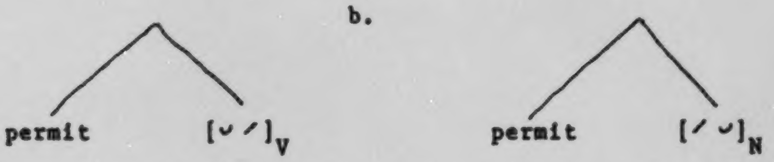
In order to get around these problems with Williams' treatment of headless rules, one might propose to treat these cases (e.g. English ablauting verbs) as involving branching, in much the same way as affixation morphology does. A possible formalization of this is given below:[9]

(6)



This allows one to capture the parallel nature of the ablauting and suffixal forms neatly. Similar treatments could be devised for each of the headless derivations indicated earlier in (3), for example

(7) a. b.



For English such a solution, though involving a considerable amount of abstractness, might be feasible. One could argue that since suffixing forms exist alongside simultaneous forms the two are to be treated in a similar manner. However, in languages (like Maasai, apparently) where no suffixing forms exist beside the simultaneous forms it is impossible to provide any motivation for a right-branching treatment. In these cases such an analysis would be quite ad hoc. Thus even if one accepts this abstract solution for English, its extension to other languages will not always be warranted and will often simply be arbitrary, something done solely for the sake of saving the theory. This arbitrariness makes it difficult to maintain that Williams' claims have any empirical content in such instances. Thus one must admit that the head cannot always be identified as the rightmost branching element, as Williams would have it.

This result, while unfortunate for Williams' theory, nonetheless is most welcome, for there are other problems with calling the right hand branching element the head of the word.

In particular, Williams' definition of 'head' would run afoul of languages which, unlike English, are generally prefixing. In such languages, for example Swahili, information which is determined by the right-hand 'head' of morphologically complex words in English, for example, part of speech or grammatically relevant features like case or tense, is instead determined by prefixes:

(8) Swahili (Nida (1949: 12-13))

a. ni-na-mu-pika
I-past-him-hit

b. a-taka-nu-pika
he-will-you (pl.)-hit

For such languages, someone working within Williams' framework would either have to start with a very abstract analysis in which all Swahili prefixal elements started out as suffixes or else allow for left-hand heads in some languages. This latter step would mean that any claim of universality for the definition of 'head' would have to be given up (and note that Williams must have some interest in a universal definition, for he does apply his definitions to Latin later on in his article). Thus, Williams' definition of 'head' fails cross-linguistically really because it is too language-specific.

Moreover, it is not simply languages like Swahili that pose problems for this definition of head. As Williams himself notes (249), the prefix _en-_ in English 'systematically converts nouns and adjectives into verbs, thus displaying the behavior of a head', as in:

(9)	dear	<--->	endear
	noble	<--->	ennoble

Thus even English has some non-right-hand heads--Williams 'explains' the head prefix _en-_ away by saying that it is exceptional but it is a systematic exception: thus he is allowing his theory to 'leak',[10] and in view of what we have seen concerning his notion of 'head' and a language like Swahili, perhaps this is a serious leak which he cannot and should not so readily plug up. It is just as easy to conclude from the behavior of the prefix _en-_ in English that the Right-Hand Head Rule simply is wrong, and the problems with prefixing languages confirm this conclusion.

2. _On the analysis of Latin and theory of a paradigm_

We turn now to a discussion of the Latin nominal and verbal systems. Williams presents these analyses as (1) a way of illustrating the principles of lexical relatedness and his Right-Hand Head Rule and the way in which it might be applied to languages other than English and (2) as a means of 'explaining' why inflectional affixes appear outside of derivational affixes without recognizing a distinction between the two. In order to make such an explanation work Williams develops a Theory of the Paradigm. Williams' main testing ground for his theory and all that it encompasses--relatedness, head, syncretism, syntactic relevance, etc.--is Latin, specifically the Latin nominal and verbal systems.

However, Williams' analyses of Latin are seriously flawed in a number of respects. These include methodological problems as well as empirical problems, some of which are caused by Williams' methodology. As a result, it can be concluded that his Theory of the Paradigm and the principles upon which it is based are untenable.

2.1. _Williams' corpus_

The first major problem is methodological in nature. Williams at no point establishes what his corpus is for the description of Latin morphology nor does he acknowledge any sources. While Latin is a language which is well known (and thus such omissions are not as serious perhaps as for less widely known languages), the failure to give such information does present some difficulties; in view of the numerous errors and oversights of fact in Williams' Latin for instance,[11] what is one to make of his 'citations' of forms supporting his analysis? His failure to be explicit about sources makes it all the worse, moreover, that he arbitrarily rules out from consideration at least one case and one declensional class (see below, section 2.2), for these are part of the description of every Latin grammar we have ever seen, even the most elementary ones.

Another aspect of the failure to establish a corpus is that Williams never specifies what he means by 'Latin'--is it Classical Latin only or archaic (Old) Latin as well? Is it Ciceronian Classical Latin in general or just Cicero's usage; does it include later Classical authors such as Pliny the Younger and Tacitus or not; is it elegant literary Latin (e.g. Virgil or Horace) or low-style literary Latin (e.g. Apuleius or Petronius), which is said to reflect popular speech (Pulgram (1958: 314))?[12]

This concern we voice here is not an idle one, for Williams' failure to specify his corpus and sources essentially makes his analysis untestable. His 'experiment' cannot be replicated, let alone fully analyzed and critically evaluated, because we do not know if he was just examining Ciceronian usage (though we doubt it) or what. However, under the assumption that he was somehow giving a 'Pan-Latin' collection of forms, i.e. roughly the familiar usage most people learn as 'Latin' in school, we offer the following critique, basing our analysis on such a form of Latin augmented by variants which must have formed part of the average educated Latin speaker's linguistic competence (inasmuch as they appear in authors of the Classical era).

We have relied on standard Latin reference works, such as Allen and Greenough (1903), Ernout (1953), and Leumann-Hofmann-Szantyr (1963). Since the point of reference for these grammars is the literary variety of Latin of the Ciceronian age, most of the forms we cite can be found in the writings of Cicero or his contemporaries. Since, however, the Latin taught in schools is in some important senses a 'Pan-Latin' variety, forms from pre- and post-Ciceronian writers of various social, ethnic, and regional backgrounds are included in these grammars. We have therefore not hesitated to cite forms from as early as Plautus (circa 200 B.C.) or as late as Tacitus (circa 100 A.D.).

2.2. Paradigms, syntactic features and their ranking in syntactic matrices

To return now to Williams' Theory of the Paradigm, it is essential to note that for him, paradigms consist of syntactic features (SFs), e.g. tense, case, person, number, and morphosyntactic categories (MSCs), e.g. morphologically distinct forms which are 'related' in Williams' sense of the term.

The SFs are hierarchically ranked so as to yield a syntactic matrix (SM) which is then filled with MSCs. The paradigm is therefore a constellation of related forms in which morphemes expressing syntactic features function as the heads of the related forms.

To account for syncretism in Latin nominal and verbal paradigms, Williams posits SFs and a ranking for these SFs so as to yield an appropriate SM. We give below Williams' detailed matrix for the Latin noun (Table A) and his less detailed[13] one for the verb (Table B).

Table A

Syntactic Matrix of Latin noun (after Williams 1981: 267)

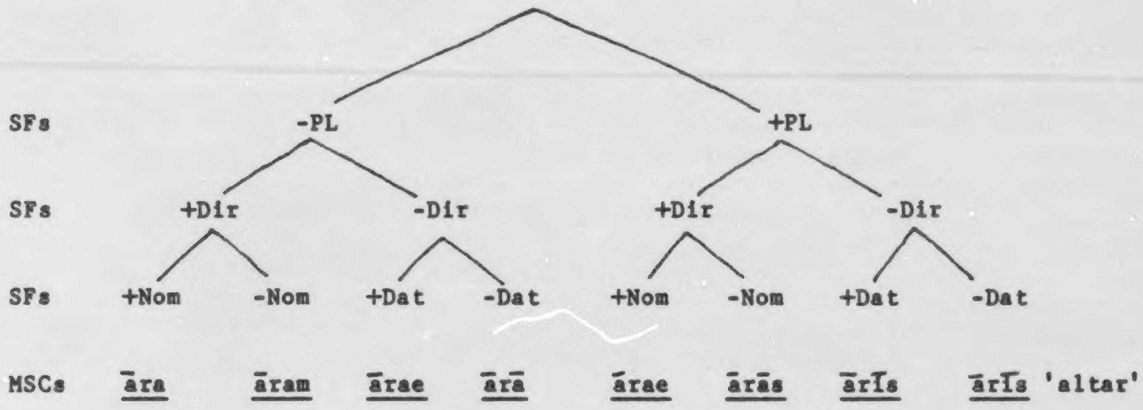
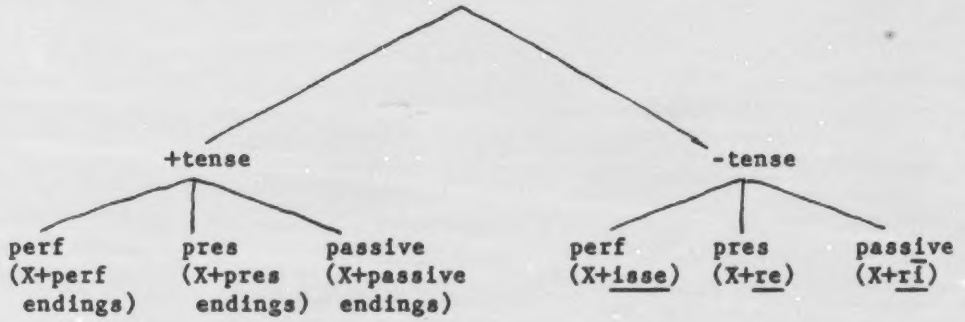

SFs
-PL
+PL
SFs
+Dir
-Dir
+Dir
-Dir
SFs
+Nom
-Nom
+Dat
-Dat
+Nom
-Nom
+Dat
-Dat
MSCs
āra
āram
ārae
ārā
ārae
ārās
ārīs
ārīs
'altar'

Table B

Syntactic Matrix of Latin verb (after Williams 1981: 269)


+tense
-tense
perf (X+perf endings)
pres (X+pres endings)
passive (X+passive endings)
perf (X+isse)
pres (X+re)
passive (X+rī)

These syntactic matrices specify the dimensions along which items are related independent of any pair of forms cited, so that in the case of substantives the SM is supradeclensional, and in the case of verbs it is supraconjugational. This fact is formally expressed in terms of possibilities of paradigm-internal syncretism.

In particular, with regard to the noun, Williams claims (268) that possibilities of case syncretism will be the same across declensions, and that only certain types of syncretism will occur: e.g. with number identical, dative = ablative, nominative = accusative, but not nominative = dative or nominative = ablative, nor any cross-number syncretisms (e.g. nominative plural = dative singular). This analysis and its predictions, however, encounter two major problems.

First, the hierarchical order of SFs which Williams assumes for the nominal SM is without any independent justification. In the description of the Latin noun he assumes that the SFs are to be ranked: ±PL > ±Direct > ±Nominative/±Dative. However, Williams does not offer any principles for such ranking and thus it must ultimately be considered *ad hoc*. Moreover, the SF *case* is divided into the categories ±Direct, +Direct governing the nominative and accusative cases, -Direct governing the dative and ablative cases. But Williams again offers no substantive evidence for the division of case into binary features.[14] As a result this move must also be considered *ad hoc*. Nevertheless, the reason for Williams' ranking and intermediate SFs seems clear: any other arrangement would yield a SM in which it would be impossible to independently specify the dimensions along which nominal forms are related, yet, as noted above, such a specification is one of the key features of Williams' Theory of a Paradigm. Thus the matrix can be made to 'work' (more or less, but see below), but only by a 'brute force' method of arranging features so as to make it work.

Second, the extent to which the matrix 'works' is actually rather limited. Williams arbitrarily restricted his description to just a subset of the total range of cases and declensions in Latin. Williams assumed, wrongly, that Latin has 5 cases (it has at least 6 and possibly 7),[15] and 4 declensions (it has 5, with numerous subdivisions within those 5)[16] and then proceeded to base his analysis on 4 cases (nom.-acc.-dat.-abl.) and three declensions (1-2-3). The reason is clear. It is difficult to make the Theory of the Paradigm work when all cases and declensions are taken into consideration.[17] The predictions concerning case syncretism made by his theory prove to be wrong not only within the limited set of data (4 cases, 4 declensions) he considered, but also within an expanded data set including the 5th declension and the genitive case.[18]

For example, in the fourth declension neuter *u*-stem nouns (e.g. *cornū* 'horn') the nominative singular (*cornū*) is identical with the dative and ablative singular (also *cornū*), a syncretism not predicted by Williams' theory. Similarly, in the first declension *a*-stem nouns (e.g. *āra* 'altar'), the nominative plural is identical with the dative singular (both *ārae*); and in a subclass of the third declension, the so-called third 'mixed' type, the nominative singular (e.g. *nūbēs* 'cloud') is identical with the accusative plural (also *nūbēs*), both instances exhibiting cross-number syncretism supposedly ruled out in Williams' schema.

Moreover, with the addition of the genitive case, one finds besides the troublesome syncretisms Williams himself notes but dismisses as 'accidental' (see footnote 17), such mergers as genitive singular = accusative plural for first declension nouns with genitives in *-ās* (e.g. *familiās* 'of a household'). Finally, by taking in the fifth declension, more unpredicted syncretisms such as genitive singular = nominative/accusative plural (e.g. *diēs* 'day') are found. The complete range of these syncretisms (excluding the locative and vocative) which falsify Williams' account is summarized in Table C below.

Table C

Some examples of syncretism in Latin noun declensions

	NOM SG	GEN SG	DAT SG	ABL SG	NOM PL	ACC PL	GLOSS
Declension 1:		ārae	ārae		ārae		altar
		familiās[a]					household
Declension 2:		hircī			hircī		he-goat
Declension 3:	canis	canis					hound
	nūbēs[b]				nūbēs	nūbēs	cloud
Declension 4:		manūs			manūs	manūs	hand
	cornū[c]	cornū	cornū	cornū			horn
Declension 5:		spē̆ī	spē̆ī				expectation
	diēs[d]	diē/diēs	diē	diē	diēs	diēs	day

a. The genitive ending *-ās* was, in literary varieties of Latin during the age of Cicero, restricted to the noun *familia* when meaning 'household'. This ending is attested more frequently in the archaic period (for examples see Ernout (1953: 19-20)).

b. Third declension nouns like *nūbēs* 'cloud' which follow the 'mixed' *i*-stem declensional pattern cannot be considered declensional aberrations. We have counted 33 nouns, in addition to *nūbēs*, which follow this declensional pattern (see Allen and Greenough (1903: 30)). Doubtless there are more.

c. The singular of *ū*-stem neuters like *cornū* 'horn' was indeclinable by the beginning of the imperial period (roughly the beginning of the reign of Augustus). The first attestation of a dative in *-ū* is found in Livy (Ernout (1953:65)). Genitive singulars in *-ū* are found in Celsus (*floruit* 50 A.D.) (*OLD*, 446).

d. During the Ciceronian age there was a considerable amount of variation in the genitive singular of *diēs* 'day'. Allus Gellius (*Att. Noct.* 1,1) informs us that Caesar, in his book *Dē Analogiā*, advocated the use of a genitive singular *diē*. This form is also attested in Virgil (*Georgics* 1, 208). A genitive singular *diēs* is found in the *Annales* of Ennius (413). Two additional genitives are found in Virgil: *diei* (*Aen.* 9, 156) [diēī] and *diei* (*Aen.* 1, 636) [dyey] or possibly [dyī].

Williams is less explicit about syncretism in the verb, but it is clear, to judge from his verbal Syntactic Matrix (see Table B), that he cannot account for syncretism in the Latin verb either. In particular, two forms of the 2 sg passive ending in primary tenses are to be found, *-ris* and *-re*, and the latter produces 'tensed' forms which are syncretic with the '*untensed*' present active infinitive (as well as the rare 2 sg passive imperative), for all the conjugations including irregular verbs, for example:

(10) a. *amā-ris* ∼ *amā-re* 'you are loved' = *amā-re* 'to love' (and cf. also *amā-re* 'be loved!)

b. *fer-ris* ∼ *fer-re* 'you are carried' = *fer-re* 'to carry' (and cf. also *fer-re* 'be carried!)

The variant ending *-re* is not at all rare,[19] and runs throughout the whole of the primary system including the present indicative and subjunctive, imperfect indicative and subjunctive, and future indicative. Since this ending is well-represented, the syncretism it causes is probably not to be treated as 'accidental'. Since this syncretism cuts across a major division, tensed vs. untensed, of the syntactic matrix tree, as well as personal ending and mood categories, it is not accounted for in Williams' system. Similarly, Williams cannot easily explain, if at all, the syncretism of the future perfect indicative active with the perfect subjunctive active in other than 1 sg and 3 pl forms,[20] e.g.:

(11) a. *dīxerit* 'he will have said' ∼ *dīxerit* 'he might have said (Subj)'

b. *tulerimus* 'we will have carried' ∼ *tulerimus* 'we might have carried (Subj)'

Thus, Williams' Theory of the Paradigm does not achieve for the Latin noun or verb what it is supposed to. With regard to the noun, no one ranking of features can yield the appropriate SM for all Latin nouns; moreover, contrary to Williams' predictions, case syncretism in Latin does indeed depend on declension, gender, and in some instances on the particular subclass within a declension or individual lexical item in question. With regard to the verb, similarly, syncretisms occur which the Theory of the Paradigm cannot account for.

2.3. *Ordering of morphemes*

In Williams' framework there is no special rule for the introduction of inflectional affixes. As a result, Williams must have some explanation for the fact that inflectional affixes tend to be 'outer' while derivational affixes tend to be 'inner.'[21] Williams accounts for the position of the rightmost inflectional morpheme in a word by means of the notion 'syntactic relevance.' Morphemes which bear 'syntactically relevant' information must appear in ultimate head position in words, i.e. the rightmost position, so that the syntactically relevant feature can percolate up to the syntactic level (264). In the Latin verb, for example, Williams claims (264) that 'tense'[22] is syntactically relevant 'in that it determines the case of subjects.' As a result, the personal endings of the Latin verb appear in ultimate head position, e.g. *dictābi-t* 'he will repeat.' The notion 'syntactic relevance' only accounts for the position of the rightmost morpheme. The implication of this notion is that there will be only one syntactically relevant morph per word, inasmuch as only one morph can be rightmost in the word. A serious problem arises, however, since within both the Latin noun and the Latin verb, more than one morph can in fact be syntactically relevant.

In the noun, the case-ending is the rightmost morpheme, and it is for Williams (264) syntactically relevant. However, it is often the case that the gender of a Latin noun is determined by a pre-final (derivational) morpheme; for example, all the abstract nouns in -*tāt*- such as the nominative *pie-tās* (from underlying */pietāts/*), gen. *pietātis* 'dutifulness', are feminine and all the nouns in -*ētu*-, e.g. *rosētum* 'rose garden' (derived from feminine *rosa* 'rose'), are neuter, and so on.[23] Gender is a syntactically relevant feature in that it determines the form of adjectives dependent on the noun, i.e.:

(12) (Cicero *Topica* 23, 90)

a. *prīma* *pietās* . . . *nōminātur*
first/fem dutifulness is mentioned
'dutifulness is mentioned first'

b. *_prīmus_ *pietās* . . .
first/masc

Thus gender is a feature which in Williams' system must be able to percolate upwards to the node dominating the word in question, and therefore would be predicted to be rightmost; however, such morphemes are never in ultimate head position.

Similarly, regarding the verb, there are constructions in which the occurrence of a subjunctive mood form higher up in a sentence causes a verb which would otherwise be indicative to instead be subjunctive; this is the phenomenon known as 'subjunctive by attraction' (see Hale & Buck 1973: section 539), as in:

(13) (Cicero *Dē Ōrātōre* I, 61, 260)

cum *ita* *balbus* *esset,* *ut* *eius* *ipsius* *artis* *cuī*
since so stammering was/3sg that that-very-art/gen which

studēret *prīmam* *litteram* *non* *posset* *dīcere*
study/3sg subj first-letter/acc not could/3sg subj say/inf

'Since he was such a stammerer that he could not pronounce the first letter of the very art he was studying.'

in which the subjunctive *studēret* occurs in place of the imperfect indicative *studēbat* by 'attraction' with the subjunctive *posset*. Thus mood markers are syntactically relevant in that they can affect the forms of words associated with them.[24] Yet they never occur in final position and are always 'inner' with respect to the personal endings.

Thus the notion 'syntactic relevance' cannot be used to get the order of morphemes in Latin nouns and verbs to come out correctly, since it predicts that certain elements should be in ultimate head position when in fact they are not. Williams' system, therefore, fails to account for this aspect of the ordering of morphemes in Latin words.

Similarly, Williams' framework has difficulties accounting for the position of inflectional affixes which are *not* syntactically relevant. Ostensibly, Williams accounts for the position of these affixes outside of derivational affixes by relying on the notions *head* and *relatedness*. However, it is difficult to see what value these notions have for determining the linear order of morphemes, since, in a stem like *dic-tā-bi-*, with the morphological analysis:

(14) *dic-tā-bi-*
say-FREQ-FUT

both the 'derivational' morpheme -*tā*- and the 'inflectional' morpheme -*bi*- are 'heads', based on Williams' criteria for 'headness' (pp. 248-253), yet neither one is more 'head'-like than the other; thus there is nothing which should cause -*bi*- to appear to the right of -*tā*-.

In actuality, Williams accounts for the ordering of inflectional morphemes outside of derivational by using the paradigm, which is constituted by syntactic features, *inter alia* (see section 2.2 above). Thus the property of bearing a syntactic feature, whether 'syntactically relevant' or not, becomes, in Williams' theory of the paradigm, a further way of distinguishing among morpheme types. In the stem *dic-tā-bi-*, -*bi*- will appear outside of -*tā*- by virtue of the fact that it possesses a syntactic feature, the criterion for being involved in a paradigmatic relationship, while -*tā*- does not. Thus, Williams accounts for the order of morphemes in words like *dictābit* in essence by creating a three-way division in affixal morphemes based on the notions 'bearing a syntactically relevant feature' and 'bearing a syntactic feature'.[25] For example, the personal ending -*t* possesses a syntactic feature and moreover that feature is syntactically relevant; and hence it must be in ultimate head position. -*bi*-, however, only possesses a SF and that feature is not syntactically relevant; as a result, its position is inside of -*t*. The affix -*tā*- possesses no SF and so automatically has nothing of relevance; as a result it occupies the innermost position in the linear order of affixes.

Therefore Williams can indeed dispense with a rule introducing inflectional affixes, but it is accomplished at the cost of introducing a three-way distinction among affixal morphemes. But even this three-way distinction does not enable Williams to account for all aspects of the order of affixes in all Latin words.

In particular, there are sequences of morphemes containing elements of the same feature designation, so that any decision as to which one is more of a 'head' and thus outside the other, is purely arbitrary. A form of this type is the 3rd person singular future perfect indicative, e.g. *dictāverit* 'she will have said', which is to be morphologically analyzed as:

(15) *dic-tā-v-eri-t*

say-frequentative-perf-fut-3sg

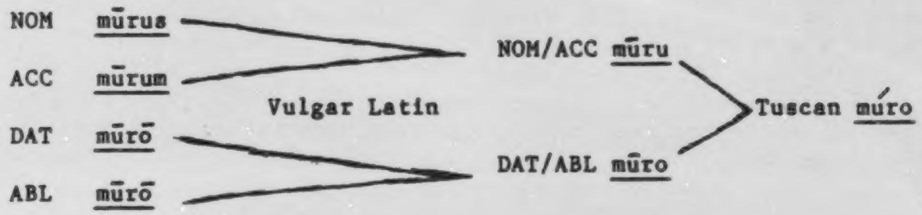
$$\text{(root)-}\begin{bmatrix}\text{-syn rel}\\\text{-syn feat}\end{bmatrix}\begin{bmatrix}\text{-syn rel}\\\text{+syn feat}\end{bmatrix}\begin{bmatrix}\text{-syn rel}\\\text{+syn feat}\end{bmatrix}\begin{bmatrix}\text{+syn rel}\\\text{+syn feat}\end{bmatrix}$$

Both the *-v-*, as a marker of the perfective aspect, and *-eri-*, as a marker of the future tense, would bear syntactic features in Williams' system (see section 2.2) but these features would not be syntactically relevant in that they would not affect the form of other words *dictāverit* is connected with. Yet it is a fact about Latin that the *-v-* must always appear inside *-eri-*; this fact shows that making use of a three-way distinction among morpheme types through these features, the way Williams implies, cannot account for all aspects of the ordering of morphs within words in Latin.

2.4. *Diachronic falsification*

Williams' theory can be falsified in one other way. Under the reasonable interpretation that synchronic predictions about case syncretism delimit possible diachronic developments, Williams' analysis cannot explain certain developments in nominal paradigms between Latin (in the general sense) and Romance. In the Tuscan variety of Italian, for example, all of the singular forms (except the genitive) of *o*-stem nouns fall together as a result of various diachronic developments (loss of *s#* and *m#*, merger of unaccented *o* and *u*):[26]

(16) Latin *mūrus* 'wall' =====> Tuscan *múro*



The transition from one chronological stage of a language, e.g. Latin, to another, e.g. Tuscan, can be viewed as a series of changes in successive synchronic language stages. Therefore, the impossibility of a merger synchronically of NOM/ACC with DAT/ABL due to general principles such as those Williams tries to develop would make it impossible, in his framework, for a language like Latin to develop into a language like Tuscan,[27] for at some point a merger otherwise ruled out by his system would have to be tolerated synchronically. Indeed, taking Williams' position to its extreme in diachronic terms, it seems that he is making a strong--but in our view improbable--claim about sound change, namely that no sound change can occur which would cause an 'illegal' syncretism. The Tuscan example, and numerous others like it, including the loss of inflection in English paradigms, would seem to falsify this strong diachronic interpretation of Williams' theory.[28]

5. Conclusion

To sum up, we have presented a number of criticisms of Williams' analysis which together have the effect of negating the value that his theory of the paradigm and his notions 'relatedness' and 'head of a word' might have for resolving the question of a putative difference between derivational and inflectional morphology. Whatever the merits of Halle et al.'s stance on this issue--we personally feel that it has none--Williams' analysis in no way furthers the case for no derivational/inflectional distinction. Indeed, in view of the considerable difficulties Williams analysis encounters upon closer inspection, one might well say that his account instead argues for the need to recognize such a distinction in morphology.

Many of Williams' problems, moreover, stem from his failure to draw on reliable and complete sources on the Latin language. While we do not feel that only specialists in a particular language should ever write about that language--and in fact we ourselves above cite data from langauges we have no direct knowledge of--in the case at hand more careful attention to the facts of the language would have altered much of the analysis in the first place, thereby avoiding the pitfalls we have pointed out.

Footnotes

*This paper is a revised version of a paper read at the 1982 Annual Meeting of the Linguistic Society of America. Sections 2.1, 2.2, and 2.3 are based on a paper scheduled to appear in _Linguistic Inquiry_ 15 (1984). At this time we would like to thank Don Churma and John Nerbonne of the Ohio State University, and Alec Marantz of Harvard University, for their comments on our work. This work was supported in part by the Center for Medieval and Renaissance Studies at the Ohio State University.

[1] This is not to say, of course, that Bloomfield, Anderson, Pullum and Zwicky all share the same views concerning the nature of derivational and inflectional morphology. In particular, Bloomfield treats the two as sub-types of a larger domain of morphology while the others assign each to separate components and do not necessarily place the two together within a single larger component.

[2] Compare, for instance, the following passage from Halle's article (p. 6): 'the examples discussed above have been chosen from the domain that traditionally has been called _derivational morphology_. As far as I can tell, facts that traditionally have been treated under the separate heading of _inflectional morphology_ must be handled in completely parallel fashion to those discussed above. I know of no reason why the list of morphemes should not include also the _inflectional affixes_ or _desinences_, or why the rules of word formation should not include rules for positioning the inflectional affixes appropriately or for handling such other inflectional phenomena as reduplication, stem ablaut, etc.'

[3] Here and elsewhere, when citing Williams' paper, we give only the relevant page numbers.

[4] Strauss, for instance, attacks Williams--convincingly, in our view--on the issues of semantic compositionality and structural well-formedness. Churma, moreover, points out that, contrary to Williams' claims (251), compounds do occur in which there is internal inflection, such as *publications list*, *abstracts committee* (and we note in passing that such compounds with inflected first members occur in a number of ancient Indo-European languages, e.g. Vedic *rathe-ṣṭhā́-* 'standing on a car' with locative first member (see MacDonnell (1916: Section 187.2) for more examples) and possibly, though it could be a late univerbation rather than an old compound, Latin *aquaeductus* 'passageway for water' with a dative first member (Buck (1933: 353))).

[5] We use double-headed arrows (<--->) intentionally here to beg the question of the 'direction' of the derivation in these instances; we wish only to emphasize the relatedness of the members of each pair.

[6] Williams (250), in describing the formation of nouns like *push up* from verb + particle combinations, states the relevant rule as follows (Williams' example (19)):

(1) word ---> phrase

(N ---> VP)

which seems to us to have the direction of the arrow reversed; deriving the noun *push up* from the verbal unit *push up* strikes us as far more natural than deriving the verb from the noun.

[7] For a discussion of the notion exocentric and examples of exocentric morphological constructions see Nida (1949: 94).

[8] The diacritics ˋ ˉ ˇ ˊ mark low, mid, contour, and high tones, respectively. Nida does not specify what the semantic distinction among these forms is and it is hard in some ways to reconcile the facts he cites with the description of Ngbaka given by Thomas (1963), though Thomas (135-141) does give a number of 'headless' (in Williams' sense) derivations such as *bī* 'black' <---> *bì* 'blacken' which would be problematic for Williams' treatment. Tiv, as described by Goldsmith (1976: 36-45), following Arnott (1964), may be a better example of a language with simultaneously realized inflectional markers. We thank Don Churma for bringing Tiv to our attention.

[9] The formalization of the 'structure' of ablauting verbs described in (6) would actually parallel the structure of suffixing verbs as diagrammed by Williams (250: (20b)).

[10] See footnote 17 for another instance where Williams is not disturbed by an 'accidental' array of facts counter to the predictions of his theory.

[11] The omissions are noted in section 2.2 below. The other errors of fact are as follows:

a. Williams generally fails to indicate the length of Latin vowels (vowel length is phonemic in Latin, e.g. *ōs* 'mouth' vs. *os* 'bone'). For example, first conjugation Latin verbs generally (there are very few exceptions, e.g. *dare* 'give') have a long stem vowel *-ā-*, e.g. *lūdificās* 'you deride' (stem *lūdificā-*), *amābis* 'you will like' (stem *amā-*). Williams consistently (13 times) fails to indicate that this stem is long.

b. Williams cites (269) only one (*-rī*) of the two (*-rī*/*-ī*) present passive infinitive endings. The third conjugation regularly uses the ending *-ī*, e.g. *capī* 'to be seized'. The remaining conjugations (1, 2, 4) use the ending *-rī*.

c. Williams claims (268) that the third declension neuter nominative/accusative singular ending is *-us*. Most Latin third declension neuter nouns are counterexamples to this statement, e.g. *animal* 'animal', *cor* 'heart', *calcar* 'spur', *ōs* 'mouth', *os* 'bone', *nōmen* 'name', *mare* 'sea', etc. (see Allen and Greenough (1903: 26-30)). There are a few neuter nouns of the third declension which do end in *-us*, e.g. *corpus* 'body', *opus* 'work', *genus* 'family'. However, the *-us* in these cases is part of the stem, not a nominative/accusative neuter ending.

d. Williams' morphological analysis of Latin verb forms is inconsistent and in some cases simply wrong. Williams' analysis of the first and second conjugation future morpheme illustrates this point well. On page 264 Williams notes that *-bi-* is the Latin future morpheme. However, embedded in his discussion of morphosyntactic categories (270) is a diagram of the structure of the Latin stem *lūdificāb(i)* 'delude' in which the future morpheme is analyzed as *-āb-*. Incredibly, in the first sentence below this diagram the morpheme is noted simply as *-b-*. Of the three segmentations cited by Williams, *-āb-* is impossible, for it obscures the relationship between the *-ā-* vowel of the first conjugation presents and the *-ā-* of the future, *amās* vs. *amābis*, and cannot work for the second conjugation futures, e.g. *sordēbis* 'you will be worthless'. For the remaining segmentations *-b-* and *-bi-*, at least two possible analyses exist. Redenbarger (1976: 7 and 1980 class lectures) argues that the underlying representation for this morpheme is /b/ and that *-i-* is epenthesized in the environment C+___C (where + indicates a productive morpheme boundary), e.g. /*amā*+*b*+*t*/ ---> *amābit*. While such an analysis is conceivable it is not as attractive in our opinion as an analysis which recognizes two lexical variants, *-b-* and *-bi-*. The advantages of this analysis as opposed to the one suggested by Redenbarger are discussed at length in DeWandel (1982: Chapter 1).

[12] The relation among these several sociolects and varieties is a complex sociolinguistic question to which we do not even pretend to have an answer here; we merely acknowledge that this is a factor which any truly adequate analysis of Latin morphology must ultimately grapple with, and note that Williams never even recognizes the existence of such an issue.

[13] Williams' verbal matrix omits the imperative and subjunctive moods as well as the imperfect and future tenses. Moreover, his ternary division for the verb implies that the passive stem is in some way distinct from the active stem, an observation which the facts of Latin clearly do not warrant, for the present stem is the base for the addition of both active and passive personal endings, cf. *amā-mus* 'we love' ~ *amā-mur* 'we are loved.'

[14] A binary analysis of SFs is not even a necessary feature in Williams' system, for he gives (269) a ternary division for verbal forms, into passive, present, and perfect stems (see Table B).

[15] The six secure ones are nominative, genitive, accusative, dative, ablative, and vocative; the one additional questionable one is the locative. Not all nouns form locatives (i.e. locatives are not widely enough attested to allow one to infer full productivity for this case/category). Moreover, locatives, when they do occur, are formally distinct only for some third declension nouns (e.g. *rurī* 'in the country') and otherwise are identical in form to the genitive case or the dative/ablative depending on declension and number (see any handbook of Latin for details). Similarly, the vocative is distinct in form only for singular second declension masculine nouns (except for *r*-stems, though *puere* occurs once (Plautus *Pseudolus* 241)) and otherwise is identical with the nominative. Thus one can sympathize to some extent with Williams' having ruled the vocative and locative out of consideration; but the decision is arbitrary and nowhere does he justify it, let alone even mention it.

[16] The grammars and handbooks of Latin divide the nominal system into five declensions. This division was instituted by the ancient grammarians (see Leumann-Hofmann-Szantyr (1963: 256)). As any Latinist would readily admit, however, this division is somewhat arbitrary and does not accurately represent the diversity which exists within each declension. For example, second declension *r*-stems form a distinct subclass apart from *o*-stems (see Allen and Greenough 1903: 21); within the third declension at least four subclasses must be recognized: stems ending in an obstruent, stems ending in a sonorant, 'pure' *i*-stems, and 'mixed' *i*-stems (see Allen and Greenough (1903: 24-31).

[17] As Williams himself recognizes with regard to (only) the genitive (268-269): 'the genitive singular is something of a problem, since it is syncretic with the nominative plural in I and IIM and IV. It is impossible to express this syncretism in the theory outlined here, and it must thus be viewed as 'accidental' syncretism.' This statement is rather odd, given the fact that earlier (267), Williams states that he 'will ignore the genitive, which can be fit into the theory in a number of ways.'

[18] Not to mention, of course, the additional problems that would arise if the vocative and locative cases were both taken seriously.

[19] The 2 sg passive -*re* is the more frequent variant in the archaic period. By the classical period, however, the variant -*ris* was preferred in the present indicative while -*re* was preferred in the imperfect and future indicative and the subjunctive (see Ernout 1953: 122).

[20] Originally, the future perfect and the perfect subjunctive were distinguished by means of vowel length, short *i* (-*eri*-) in the future perfect, long *ī* (-*erī*-) in the perfect subjunctive. Traces of this distinction can be found in the archaic poets, e.g. Plautus *uĕnerīmus* (*Bacch*. 1132). This length distinction was neutralized by the classical period and as a result the future perfect and perfect subjunctive were syncretic in all but the 1 sg (see Ernout 1953: 218 for the 3 pl).

[21] The appearance of an affix to the right of a root morpheme is accounted for by Williams' affixation rule (246).

[22] We suspect finiteness is a better term, as the personal endings do not themselves indicate tense in the sense of temporality.

[23] See Allen and Greenough (1903: 140 ff.) for details.

[24] We have given this example because it is unlikely to be semantically controlled. Other sequence of tense/mood phenomena traditionally described for Latin could well be semantic and hence not relevant here.

[25] According to Williams a morpheme which contains a syntactically relevant feature by definition contains a syntactic feature. As a result there can be no morpheme with the feature designation [+ syntactically relevant] and [- syntactic feature].

[26] For a concise discussion of these diachronic developments in Tuscan see Elcock (1960: 24, 43, 51-52).

[27] We are assuming here that Vulgar Latin (i.e. the language roughly equivalent to Proto-Romance) was a coexisting sociolect with literary Classical Latin (i.e. roughly the variety of Latin Williams attempts to describe) and that many speakers were competent in both varieties. If such an assumption is unwarranted--the relation of the two varieties of Latin is indeed a complex issue and we do not presume to have a simple answer to it--then the diachronic evidence cited here may well not count against Williams' account (though, of course, all of the synchronic considerations mentioned above still would). See also footnote 12 and section 2.1 above.

[28] In essence Williams' theory predicts that grammatical conditioning on sound change should be a common phenomenon. However, good instances of grammatical conditioning are very difficult to find. For a discussion of grammatical conditioning on sound change and a reaffirmation of the Neogrammarian position, see Hock (1976, especially pp. 211-218).

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Heads

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1. The problem

Recent work on morphology--Lieber (1981), Williams (1981), Kiparsky (1982), and Selkirk (1982), in particular--has extended the notion of head from syntax into new areas in morphology. In particular, these writers propose that in forms with derivational affixes, like English happiness, the affix is the head of the combination; for instance, Kiparsky assumes (following Lieber) 'that all word formation is endocentric', meaning by this 'that the category of a derived word is always non-distinct from the category of its head, in English usually the rightmost constituent (cf. Williams 1981)' (133).

What makes this proposal attractive is that it allows us to take advantage of a general principle, called Percolation by most of these writers, which requires that the category of a construct and the category of its head be identical, so that assigning -ness the category N has the effect of 'projecting' that category (rather than the category of the other constituent, the A happy) onto the construct happiness. Percolation also requires that other morphosyntactic features, such as gender and number, be identical for the construct and its head; Percolation then plays exactly the same role in morphology that the Head Feature Convention of Gazdar and Pullum (1982) plays in syntax. On this analysis, happiness belongs to the category N for the same reason that those penguins belongs to the category NP, that is, N-with-two-bars: because the head of each construct (-ness and penguins, respectively) is itself an N.

Now it would be sophomoric to criticize this analysis merely because its principal move, assigning -ness to the category N, is utterly untraditional and therefore astonishing. On the other hand, anyone who puts this analysis forward surely has some burden to show that there is a reason for believing in it beyond the one fact that it appears to get things to work.

What I will do here is give a summary of alternative definitions for the head of a syntactic construct and then consider how these proposals would extend to morphology. The short moral of this exercise is that there are several quite distinct and incompatible notions of head in syntax, and that not one of them extends in a satisfying way to morphology.

2. Heads in syntax

The intuition to be captured with the notion head is that in certain syntactic constructs one constituent in some sense 'characterizes' or 'dominates' the whole. From these basic ideas, however, it is possible to move in many directions, eight of which I consider below. The definitions in 2.1 (the distributional head), 2.5 (the head as governor), and 2.6 (the head as determinant of concord) are those mentioned in Crystal's dictionary (Crystal 1980, 172) and can be taken as the most traditional (though not, of course, necessarily the most central) of the set. In addition, I take up the head as syntactic determinant (section 2.2), the head as the locus of inflectional morphology (section 2.3), the head as the obligatory constituent (section 2.4), the head of Dependency Grammar (section 2.7), and a semantic notion of head, the semantic argument (section 2.8).

To clarify the differences between the various definitions of *head*, I will examine what they say about the following combinations of constituents in English:

1. Det+N, as in *those penguins*
2. V+NP, as in *control those penguins*
3. Aux+VP, as in *must control those penguins*
4. P+NP, as in *toward those penguins*
5. NP+VP, as in *we control those penguins*
6. Comp+S, as in *that we control those penguins*

2.1. *The distributional head*

One proposal (pursued especially by structuralist syntacticians, and finding its most careful development in works like Harris 1951) is that the head characterizes the construct in the sense that it is the one constituent that belongs to a category with roughly the same distribution as the construct as a whole. In Bloomfield's (1933, 194) formulation, the head is the constituent that belongs to 'the same form-class' as the construct.

For there to be a head in this sense, the construct must have *some* constituent belonging to a category with roughly the same distribution as the construct--that is, the construction must be endocentric, in the traditional sense of this word. On this definition, only the first three of my example constructions have heads: N is the head of Det+N, since the distribution of the construct is roughly the same as the distribution of Ns like *penguins* and *Kim*; V is the head of V+NP, since the distribution of the construct is roughly the same as the distribution of Vs like *write* and *vanish*; VP is the head of Aux + VP, since the distribution of the construct is roughly the same as the distribution of VPs like *control those penguins* and *go to Fresno*. Because of these facts, on distributional grounds we assign Det+N to an 'N-type' category, namely NP; V+NP to a 'V-type' category, namely VP; and Aux+VP to a 'VP-type' category, namely some sort of VP.

In contrast, the P+NP construct has the distribution of neither P nor NP; instead, since it combines with V or with V and NP to make a construct of category VP (*move toward those penguins, put the suntan lotion on those penguins*), it has roughly the distribution of Adv. The NP+VP construct has the distribution of neither NP nor VP; instead, it has a unique distribution and is assigned to a new category S. The Comp+S construct has the distribution of neither Comp nor S; instead, since it combines with V to make a construct of category VP (*realize that we control those penguins*) and with VP to make a construct of category S (*that we control those penguins astonishes everyone*), it has roughly the distribution of NP.

(Though P+NP, NP+VP, and Comp+S are exocentric from a distributional point of view, some or all of them are treated as endocentric in certain current syntactic theories. In the version of Generalized Phrase Structure Grammar in Gazdar and Pullum (1982), for instance, all three are analyzed as endocentric: P and P+NP are both subcategories of P; VP and NP+VP are both subcategories of VP, hence also of V; and S and Comp+S are both subcategories of S, hence also of V. These category assignments play a crucial role in the placement of inflectional marks (see section 2.3 below). The assignment of P+NP to PP--that is, P with one or more bars--is very nearly universal among 'X-bar' syntactic theories (e.g., GPSG, Lexical Functional Grammar, Government and Binding Theory, Jackendoff's 1977 X-bar Syntax). The assignment of S and Comp+S as subcategories of one category is equally widespread. On the other hand, some analysts treat NP+VP exocentrically, as belonging to a category S distinct from V, while others treat it endocentrically, as a subcategory of V; see the chart summarizing eight different proposals in Gazdar et al. (1983, 3)).

2.2. The head as the syntactic determinant

The next version of head is one that has not been offered by any syntactician, to my knowledge. I mention it here because it is the closest analogue to the Lieber-type proposal for morphology.

The motivation for this definition in syntax comes from exactly those cases where the distributional definition plays no role, namely distributionally exocentric constructions like 4 through 6 above. The intuition about such cases is that one of the constituents 'dominates' the other and so 'determines' the category of the construct.

Now there are several ways of making the sense of 'determination' more precise; three are developed in sections 2.5 (the head as governor), 2.7 (the head of Dependency Grammar), and 2.8 (the semantic head). Here the idea is that for some constructs, one of the constituents, X, is pretty much restricted to this construct, while the other constituent, Y, occurs in a number of other constructs; as a result, from the occurrence of X in a construct we can determine that its sister constituent is Y, but not vice versa. Somewhat more precisely, on this definition the head of a construct is the constituent with the most restricted set of co-constituents.

The syntactic determinant in the P+NP construct is clearly P; NP combines (at least) with V, with VP, and with N (in the possessive construction of those penguins' bills), as well as with P, while P combines only with NP. On the same grounds, VP is the syntactic determinant in NP+VP. The case of Comp+S is not quite so clear, but the evidence is somewhat in favor of Comp as the syntactic determinant, since Comp combines only with S, while S combines (at least) with subordinating Conj as well.

It now turns out that the syntactic determinants in cases 1-3 are not entirely coincident with the distributional heads. In case 3, V is the syntactic determinant as well as the distributional head (for the same reasons that established P and VP as the syntactic determinants in cases 4 and 5). But in cases 1 and 2, the syntactic determinants are the distributional modifiers, Det and Aux, rather than the distributional heads, N and VP, respectively; N and VP have wide privileges of combination, while Det and Aux are very restricted.

2.3. The head as the locus of inflectional morphology

Another way in which one constituent can 'characterize' a construct is that it can be the bearer of the inflectional marks of the syntactic relations the construct bears to other syntactic units. This is the crucial characteristic of the head in Generalized Phrase Structure Grammar.

The inflectional locus in our cases 1-3 is quite clear. N is the inflectional locus in Det+N; the distinction between singular the child and plural the children is linked to number distinction in VP. Aux is the inflectional locus in Aux+VP; the number and person distinctions in be/am/is/are/was/were controlling those penguins are linked to these distinctions in the subject NP. And V is the inflectional locus in V+NP, because of the person and number distinctions expressed in control/controls those penguins.

VP is perhaps the inflectional locus in NP+VP, and S in Comp+S. In the first case, person and number are marked on both the NP and VP, but only the VP bears the marks of tense. In the second, only S bears the marks of tense. The question is whether there are syntactic conditions linking the tense of S and/or S' to the tense of other units. If there are, then they decide the assignment of inflectional loci; if not, the question is moot.

English P+NP has no clear inflectional locus; the NP does bear the marks of person and number, but person and number play no role in the distribution of P+NP constructs. And English marks no grammatical categories on P.

(Given other assumptions in Generalized Phrase Structure Grammar about the principles distributing morphosyntactic features that will receive inflectional realization, the inflectional loci in these last three cases are clear: P is the inflectional locus in P+NP, VP in NP+VP, and S in Comp+S).

2.4. The head as the obligatory constituent

If the head of a construct characterizes that construct, then we should expect the head to be the part that is present in all its occurrences--that is, we should expect the head to be obligatory (and non-heads to be optional). Notice that this definition of head is closely related to the first (in section 2.1) and might be considered to be an extension of it to (some) syntactically exocentric constructions.

If this definition is to be usable in all but a tiny handful of cases, we must make a distinction between constituents that are optionally present and those that are elliptical. The NP of V+NP is optionally present; there are both transitive and intransitive verbs. Similarly, the Aux of Aux+VP is optionally present; there are verb phrases with and without auxiliaries. The V of V+NP can, however, be an elliptic zero (as in *I ate sushi, and Kiyoko a hamburger*), and so can the VP of Aux+VP (as in *I can swallow goldfish, but you can't*). Speaking very crudely, elliptical constituents must be interpreted from context (linguistic or otherwise), but optionally present constituents require no such contextual interpretation.

With this background, we can review the six sample cases from English, to determine which constituent (if any) is the obligatory one.

For the three cases in which the criterion of section 2.1 picks out a distributional head, the criterion of obligatoriness agrees. In Det+N the N is the obligatory constituent; *problems* and *rice* are simply determiner-less NP's, but most noun-less NPs, like *Timmy's* and *the pink*, are elliptical. In V+NP the V is the obligatory constituent, and in Aux+VP the VP is the obligatory constituent, as I pointed out above.

Of the remaining cases, all except P+NP are reasonably clear. For Comp+S, S is the obligatory constituent, given that Comp does not occur without S, though S occurs without Comp in examples like *I think the penguins are ready to eat*. For NP+VP, the existence of subjectless imperative sentences like *Hand me that dwarf!*, in combination with the fact that a sentence consisting entirely of a NP (like *Your desk chair*) is understood as elliptical, means that VP is the obligatory constituent in NP+VP. As for P+NP, the evidence is both slight and contradictory, though somewhat in favor of P as the obligatory constituent. If prepositions and particles belong to the same category, in the fashion of Emonds (1972), then NP-less Ps are exemplified in VPs like *put the penguin on*. On the other hand, there are a small number of P-less NPs with adverbial function, among them *home* and *there*.

2.5. The head as governor

One obvious way for one constituent in a construct to 'dominate' another is for it to govern the other syntactically. Syntactic government, speaking rather loosely, is the selection of the morphosyntactic shape of one constituent (the *governed*, or *subordinate*, constituent) by virtue of its combining with another (the governor).

In the clearest examples of government, (at least some) instances of the category Y in an X+Y combination bear a mark (in particular, an inflectional mark) that Y does not bear in some other combinations, and X bears no corresponding mark.

In my six example constructions in English, the governors in V+NP, P+NP, and NP+VP are easily picked out on this basis. V and P are the governors in V+NP, P+NP, and NP+VP are easily picked out on this basis. V and P are the governors in V+NP and P+NP, respectively, and VP is the governor in NP+VP, since accusative forms of personal pronouns are required in the first two combinations, while nominative forms occur for NP in the third: *control them*, *to them*, but *they fly*. And V, P, and VP do not bear inflectional marks of case corresponding to the marks on the governed constituents.

The traditional notion of government is also extended to cases where a division of the category X into covert (inflectionally unmarked) subcategories is matched by overt inflectional marks on category Y. A typical instance of this sort of government occurs in languages (like German and Latin) in which some verbs combine with object NPs marked with one case (the dative, say), while other verbs combine with object NPs marked with a different case (like the accusative).

On this basis, Aux is the governor in Aux+VP. The English category of auxiliary verbs divides into several subcategories according to the inflectional form of the VP that follows, and the auxiliaries are themselves unmarked with respect to these subcategorizations: for instance, the modals combine with 'base', or 'unmarked infinitive', VPs (*should control the penguins*), progressive *be* with present participial VPs (*are controlling the penguins*), and passive *be* and perfective *have* with past participial VPs (*are controlled by penguins*, *have controlled the penguins*).

In a further extension of the traditional notion of government, it applies as well to examples in which a covert subcategorization in one constituent is matched by *any* overt difference in form in the other constituent, whether or not this difference is indicated by inflectional affixation. On this basis, N is the governor in Det+N, and Comp the governor in Comp+S. N is the governor because the covert count/mass distinction in singular Ns is matched by an overt lexical choice among determiners: *few penguins*, but *little sand*. Comp is the governor because the choice of one complementizer over another is matched by the selection of a finite or marked-infinitive form for the S with which Comp combines: *that the penguins are flying*, but *for the penguins to be flying*.

(I must point out here that with this last extension it is often difficult to decide which constituent governs which, and often difficult to distinguish government from concord.)

2.6. The head as the determinant of concord

Yet another sense in which one constituent can 'dominate' another is for the first to determine concord features, realized inflectionally, on the second.

The clearest examples of concord--subject-verb agreement in English is one such--are those in which the relevant feature is realized inflectionally on both constituents. What is not necessarily so clear even in these examples is which constituent determines concord; such English data as *The penguin swims* versus *The penguins swim* do not tell us whether the NP or the VP is the determining constituent for the purposes of concord. The existence of inherently plural, but morphologically unmarked, nouns like *people*, together with the nonexistence of inherently singular, but morphologically unmarked, verbs, suggests that the NP is the concord determinant in English. And the NP-VP case is clearer in some other languages. In Swahili, for instance, nouns divide lexically into a number of gender classes, each marked overtly by a prefix on the noun; verbs occur with corresponding (often identical) prefixes, but each verb can occur with all of the prefixes. These facts indicate very clearly that the subject NP is the determinant of concord on VP, and insofar as we are willing to propose that the direction of determination is universal, they suggest that NP is the concord determinant in English as well.

Taking up the five remaining English constructions on our list in order, now, we see that N is the concord determinant in Det+N, given English facts like this penguin versus these penguins and the clear directionality of determination in languages with arbitrary gender, like French and German. English gives no evidence about the concord determinant in V+NP, but languages like Hungarian, in which the verb carries marks agreeing with features of the object, suggest that NP is the concord determinant. English also gives no evidence in the cases of Aux+VP, P+NP and Comp+S, and I know of no relevant cross-linguistic evidence.

2.7. The head of Dependency Grammar

In approaches to syntax that take some generalized notion of 'dependency', rather than constituency, as the main theoretical primitive (see Matthews 1981, 78-84 for summary discussion, 94f. for references), some head-like notion plays a central role. In such a framework, a syntactic description is essentially a list of head-dependent pairs.

For syntactically endocentric construction, the Dependency Grammar head is the distributional head, and the dependent constituent is a modifier: N is the head in Det+N, V in V+NP, and VP in Aux+VP. For syntactically exocentric constructions, the Dependency Grammar head is the governor, and the dependent constituent is subordinate to the governor: P is the head in P+NP, VP in NP+VP, and Comp in Comp+S.

2.8. The semantic head: the head as the semantic argument

In traditional grammar, the head/modifier distinction is a semantic one: in a combination X+Y, X is the 'semantic head' if, speaking very crudely, X+Y describes a kind of the thing described by X. On this basis, N is the semantic head in Det+N (those penguins describes a kind of penguin), and VP is the semantic head in Aux+VP (will leave describes a kind of leaving).

A sharpening (and extension) of this proposal builds on the fact that in the semantic interpretation of Det+N, Det represents a function on an argument represented by N, and in the semantic interpretation of Aux+VP, Aux represents a function on an argument represented by VP. We might then propose that in X+Y, X is the semantic head if in the semantic interpretation of X+Y, Y represents a function on an argument represented by X.

If so, then in V+NP, P+NP, and NP+VP, NP is the semantic head, since the semantic interpretation of all three constructs involves applying a function (represented by V, P, or VP) to an argument represented by NP. And S is the semantic head in Comp+S, since the semantic interpretation of the construct involves applying a function to propositions as arguments.

One very distressing consequence of this way of looking at semantic heads is that it picks out the constituents that are syntactically determined, in the sense of section 2.2 above. That is, syntactic determinants represent semantic functions, while the current proposal identifies 'semantic heads' as arguments. Starting from two different sorts of intuitively clear cases (VP as the syntactic determinant in NP+VP, and P in P+NP; N as the semantic head in Det+N, and VP in Aux+VP), we have reached exactly opposed notions.

3. Summary and evaluation

I now summarize in a chart how the eight notions of the previous section apply to our six test constructions:

Notion	Det+N	V+NP	Aux+NP	P+NP	NP+VP	Comp+S	
Distrib. Head	N	V	VP	---	---	---	
Syntactic Determ.	(Det)	(V)	(Aux)	P	VP	Comp	
Locus of Inflect.	N	V	Aux	(P)	VP	S	*
Obligatory Constit.	[N]	[V]	[VP]	(P)	VP	S	
Governor	N	V	Aux	P	VP	Comp	*
Concord Determ.	[N]	[NP]	?	?	[NP]	?	*
Dependency Grammar	[N]	[V]	[VP]	[P]	[VP]	[Comp]	
Semantic Argument	N	NP	(VP)	(NP)	(NP)	(S)	*

This chart presents a picture of great chaos. Things are not quite as hopeless as they first appear, however.

I have placed in square brackets entries that are simple duplicates of those appearing elsewhere. The head of Dependency Grammar is identical to the distributional head for endocentric constructions and to the governor for exocentric constructions. The determinant of concord is, in fact, identical to the semantic argument (see Gazdar and Pullum 1982, 30f., and the proposals of Keenan (1974) and Bach and Partee (1980) that they cite). The obligatory constituent in an endocentric construction clearly must be the one with the distribution of the whole construct. These entries may be disregarded, as redundant.

I have placed in parentheses another set of entries obtained by extrapolation from clear cases to less clear ones. These entries too may be disregarded, as questionable.

Finally, I have marked with an asterisk those notions that I believe the grammar must represent directly. For the purposes of semantic interpretation, argument-expressions must be distinguished from function-expressions. For the purposes of inflectional morphology, the constituents that bear marks of government and concord must be picked out, and the locus of expression for these marks must be specified. These four notions are then the prime candidates for identification as 'head'; the most parsimonious solution would be to employ a notion that already figures in the grammar. Distributional heads, syntactic determinants, and obligatory constituents are in some sense represented in the grammar, but there is no reason to think that any grammatical rule refers to any of these notions, except insofar as it can be reduced to one of the other four ('syntactic determinant', for instance, can be reduced to 'semantic argument', since the two are complements of one another).

It might, of course, be necessary to add head as an additional primitive notion, but the burden of proof is on the person who proposes head as an additional primitive (to be identified with the distributional head, the syntactic determinant, the obligatory constituent, or some ninth notion I haven't discussed), rather than on the person who proposes to identify head with the locus of inflection, the governor, the determinant of concord, or the semantic argument (or with a compound notion like the head of Dependency Grammar).

4. Heads in morphology

Of the four notions that must be represented in grammar, two--the semantic argument (section 4.1) and the locus of inflectional morphology (4.2)--must clearly also be represented in morphology. A third--the governor (section 4.3)--plays a very limited role in morphology. The fourth--the determinant of concord--plays no role at all, because parts of words do not exhibit concord.

In addition to these three, in the following sections I will also consider three further candidates for the definition of head in morphology: the distributional head (section 4.4), the syntactic head (section 4.5), and the morphological determinant (section 4.6).

4.1. The head as semantic argument

The traditional notion of head in morphology is semantic in character. The area in which it is most clearly applicable is compounding: Christmas cookie has cookie as its head because a Christmas cookie is a kind of cookie. Extending the traditional notion from uncontroversially endocentric cases like Christmas cookie to word formation in general, we get the morphological correspondent to section 2.8 above: The head in word formation is the semantic argument.

On this proposal, the head in derivation is always the base rather than the affix, since the affix represents a function applying to the argument represented by the base. This is as true of derivation that doesn't change the category of the base (as in *blue-ish*) as of derivation that does (as in *blue-ness*).

4.2. The head as inflectional locus

An account of morphology must indicate *where* in a word the marks of inflectional morphology are located, just as an account of syntax must indicate which word in a phrase the marks of inflectional morphology are located on.

In syntax, a mark of inflectional morphology makes a formal unit, a word in fact, with the stem it combines with. But in morphology, a mark of inflectional morphology only coincidentally makes a formal unit with the morpheme it is located next to. If morphology were like syntax in its treatment of inflectional loci, we would expect the internal structure of *unhappinesses* to be [*un* + *happy*] + [*ness* + *es*], with the (inflectional) plural suffix forming a unit with the neighboring (derivational) suffix *ness*. But this is not the division called for by morphology/syntax/semantics--though it is just about the division needed in phonology, as Aronoff and Sridhar (1983) have observed.

The point here is that the grouping of morphemes into formal units might not be identical to the grouping of material into phonological units. This position has been generally accepted as it applies to phrasal syntax and phrase phonology, and it has long been recognized that an analysis of this sort is required for clitics (like the English possessive *'s*) which are distributed with reference to syntactic phrases (in the English case, at the end of a NP) but attach phonologically to whatever word they happen to be adjacent to. But it is only recently that this view has been taken (most forcefully by Selkirk (e.g. 1980)) in morphology.

The proposal for *unhappinesses* then is that for the purposes of morphology and semantics it has the left-branching internal structure

[[*un* + *happy*] + *ness*] + *es*]

but that for phonological purposes it consists of two binary feet. The 'phonological purposes' in question are two: First, the division *unhappy* + *nesses* is the appropriate one for the assignment of prosodic features, in particular stress; and second, this division is the appropriate one for the selection of irregular inflectional formations in cases like *maple leaves* and *baby teeth*.

All that needs to be said about the locus of inflectional morphology in English is that inflections are suffixes--that is, they come at the end of a word, *whatever* the morphological or semantic relationships among the other morphemes in the word. The indifference of inflection to the internal organization of words is perhaps clearest in English compounding, where there are many relationships among the constituent words (compare *Christmas cookie*, *pickpocket*, *blackbird*, *step-in*, *producer-director*), but all types of compounds have plurality marked on the last word: *Christmas* *cookies*, *pickpockets*, *blackbirds*, *step-ins*, *producer-directors*.

What I am then saying about *unhappinesses* is that -*ness* is its apparent inflectional locus only because it happens to be the last morpheme in *unhappiness*.

The case for the locus of inflectional morphology as the head constituent of a word might seem to be stronger in languages with grammatical gender; thus Bauer (1983, 30) identifies the 'grammatical head' in endocentric compounds as 'the element marked for number, and also, in languages which have grammatical gender, the element that determines the gender of the compound'. In German, for instance, a final derivational suffix like -*tum* in *Christentum* 'Christendom' determines the (arbitrary) gender of the derived word, in this case neuter. It also determines the (equally arbitrary) declension class of the combination, and so determines which of several available plural markers occurs; in this case it is the plural in -*er* (which is accompanied by umlaut): *Christentuemer*.

The issue here is, however, not the location of inflectional marks, but rather *morphological determination*, which I will take up in section 4.6 below.

Now consider the parallel facts in German compounding. A compound like *Landsmann* 'compatriot, countryman' has its plural marked on the last element, *Mann*. Consequently, the declension class of the compound (it is again a plural in -*er*) is that of the last element (*Mann* takes a plural in -*er*). And the gender of the compound, too, is that of the last element; *Landsmann* is masculine because *Mann* is masculine. This last fact, however, does not follow from the location of inflectional affixes. For the purposes of adjective agreement (*neues Christentum* 'new Christendom', but *neuer Landsmann* 'new compatriot'), the whole compound word *Landsmann* must be specified as belonging to the masculine gender, but this specification is not achieved by a statement that the inflectional locus is the end of the word. We have another case of morphological determination, to be discussed in section 4.6.

4.3. *The head as governor*

In a small class of cases, one of the items combining in word formation bears a mark analogous to the inflectional marks of government in syntax. The other, unmarked, item is then the *governor*.

In English (and German and Dutch) noun-noun compounding, one noun sometimes occurs with a suffix that is formally identical to the plural or genitive suffix, both when this mark would be semantically appropriate (as in *publications list*, with a plural, and *cat's paw*, with a genitive) and when it would not (as in the examples *bondsman*, *kinsman*, *landsman*, *marksman* cited by Bloomfield (1933, 230)). The marked noun is always the first of the pair, indicating that the second is the governor.

4.4. The distributional head

Distributional heads of words can be determined in the same way as distributional heads of phrases; as in section 2.1, this notion of head is necessarily rather limited in its applicability.

Most English derivational formations do not have a distributional head, because they are category-changing; *blueness* lacks a head, since neither the adjective *blue* nor the suffix *-ness* has roughly the distribution of the noun *blueness*. Some English compounds also lack distributional heads; in *step-in*, neither the verb *step* nor the particle *in* has roughly the distribution of the noun *step-in*.

Category-preserving derivational formations do have distributional heads, and these are of course the bases; *bluish* and *blue* have roughly the same distribution. (In some cases it is not at all clear whether the formation is category-preserving or category-changing: Does the abstract noun *kingdom* belong to the same category as the animate noun *king*?) Most English compounds also have distributional heads, so long as 'distribution' and 'same category' are understood narrowly; *sugar cookie* has the head *cookies* on this interpretation, because *sugar cookie* is a count noun like *cookie*, not a mass noun like *sugar*, and *Christmas cookie* has the head *cookie* on this interpretation, because *Christmas cookie* is a common noun like *cookie*, not a proper noun like *Christmas*. In general, the second noun is the distributional head of a noun-noun compound in English.

4.5. The syntactic head as morphological head

Bloomfield's (1933, 233ff.) classification of compounds adopts still another approach to heads in morphology, one that builds directly on a syntactic notion of head (for Bloomfield, the syntactic notion is the distributional head). A variant of this idea appears in Lees' (1960) treatment of compounds, in which they are derived by transformation from syntactic combinations.

On this proposal, the head of *pickpocket* is *pick*, because the verb is the distributional head in a syntactic combination like *pick pockets*; the head of *step in* is *step*, because the verb is the distributional head of in a syntactic combination like *step in*; and the head of *blackbird* is *bird*, because the noun is the distributional head in a syntactic combination like *black bird*. The proposal extends to cases where morphological formations do not preserve syntactic word order: *keep* is the head of *upkeep* because it is the distributional head in *keep up*; *knob* is the head of *door knob* because it is the distributional head in *knob of a door*; and *bake* is the head of *cookie baker* because it is the distributional head in *bake cookies*.

Copulative compounds like *producer-director* either have two coordinate heads (Bloomfield's proposal, which assumes that phrases like *producer and director* have multiple heads) or none (if we insist that the distributional head is the *one* constituent belonging to a category with the distribution of the category of the whole construct).

The proposal has no obvious extension to derivation rather than compounding. On the one hand, we might say that derivational formations simply lack heads in this sense. On the other hand, we might use Bloomfield's implicit assumption that derivational affixes are not syntactic elements, in which case the base is always the head in a derivational formation, because it is the only syntactic element in the combination.

4.6. The head as morphological determinant

I now return to the proposal of Lieber et al. outlined in section 1 above. The use of Percolation to determine the category and morphosyntactic features of the construct in word formation requires that the head be the morphological determinant, a notion that is entirely parallel to the notion of syntactic determinant in section 2.2 above. In English (and German) the morphological determinant in a derivational formation involving a suffix is the suffix, and the morphological determinant in a compound is its rightmost member.

In some cases the appearance of morphological determination is simply a result of the fact that rightmost elements in words are inflectional loci. We would not want to say that the 'plurality' of the suffix -ness in sadnesses or the second word cookie in Christmas cookies determines the plurality of the whole word. Rather, we want to say something that is very nearly the converse: The plurality of the whole word is expressed by inflectional marks located on the rightmost element.

In other cases, however, there is clear morphological determination. As I observed in section 4.2, both the gender and the declension class of a German derived noun like Christentum are predictable from the occurrence of the particular suffix -tum in the word, and the gender of a compound like Landsmann is predictable from the occurrence of the particular word Mann as the second word.

Morphological determination in derivation, like syntactic determination generally, resides in the material representing the semantic function. If we adopt a 'rule-to-rule' semantics in word formation (as is generally assumed in Montague-style semantics for syntactic combinations), then to a word formation rule there corresponds a principle of semantic interpretation describing the meaning of the whole on the basis of the meanings of the parts. The connection between semantic function and morphological determination in derivation is then natural, for both concern the outputs of the rule: (a) 'morphological determination' is the specification of the morphosyntactic properties of the word resulting from the rule (for German Christentum, for instance, the rule affixing -tum specifies that the resulting word is neuter and belongs to the -er declension class); and (b) the 'semantic function' is the specification of the semantic interpretation of the word resulting from the rule, which in the case of derivation is exactly what is conveyed by the affix.

For derivation, then, the morphosyntactic properties of the whole are connected to the semantic function conveyed by the affix.

Things are different in compounding. Here the morphological determinant is usually the word representing the semantic *argument*. In the German compound *Landsmann*, *Mann* is the 'semantic head', that is, the argument; a *Landsmann* is a kind of *Mann*. One might argue that even in exocentric compounds like *Rotdorn* 'pink hawthorn' (i.e. tree with red thorns) the final member is the semantic head. But the real generalization is not that the semantic argument is the morphological determinant; rather, it is that any *noun* that is the final member of a compound is the morphological determinant. In cases like the neuter *Vergissmeinnicht* 'forget-me-not' (ending with the negator *nicht*) and the masculine *Schlagetot* 'hulking brute' (ending with the adjective *tot* 'dead'), the gender of the whole is in no sense determined by the final member--or by any other member, for that matter.

Such cases are admittedly rare in the world of German compound nouns, and might easily be treated as isolated lexicalizations. A more regular, and more telling, case is provided by the 'copulative', or *dvandva*, compounds of Sanskrit. In these compounds two or more noun stems are concatenated, and the whole is understood as if the constituent words were conjoined. With respect to morphological determination, there are two schemes: according to Whitney (1889, sec. 1253), either 'the compound has the gender and declension of its final member, and is in number a dual or a plural, according to its logical value' (*devāsurās* 'the gods and demons'), or 'the compound, without regard to the number denoted, or to the gender of its constituents, becomes a neuter singular collective' (*ahorātram* 'a day and night'). In the first scheme, we have the same system as German for gender, though number is determined semantically. In the second scheme, gender and number and declension class are all determined, not by some constituent word, but by the rule that combines words.

(Here I am inclined to say that the rightmost element is indeed the head in the formation of most German and Sanskrit, and for that matter English, compound nouns, but not in the second type of *dvandva* compound in Sanskrit (or in German compound nouns not ending in a noun, if there are any productive types of these), or in suffixal derivation in general. We then need the Head Feature Convention to apply in these cases--perhaps under the name 'Percolation'--but not in word formation in general).

5. *Evaluation*

Now to evaluate the two prongs of the Percolation proposal, the assumption that the morphological head is the inflectional locus and the assumption that the morphological head is the morphological determinant.

5.1. *The inflectional locus assumption*

As I stressed above, within English words the locus of inflection can be briefly described as 'at the end', or more precisely, as 'affecting the rightmost morpheme'. The Percolation proposal achieves conceptual economy by identifying the rightmost morpheme as the head, thus avoiding any need to distinguish two different types of ordering principles in morphology--

one type referring to heads, another type referring to the margins of the word.

Here the parallel with syntax breaks down. Syntactic principles locating inflectional morphemes always refer to heads, never to margins (that is the whole point of the Head Feature Convention of GPSG), and syntactic heads are only coincidentally located at one margin of their phrases. On the other hand, there is a class of morphemes some of which are located on heads, some at margins; these are the (special) clitics (see the summary discussion in Zwicky 1977). Finally, morphological principles locating inflectional morphemes seem always to refer to margins, never to morphological constituents that would constitute heads on any traditional definition; saying this is only rephrasing the traditional dictum that inflectional affixation takes place outside word formation, at the margins of the word.

I conclude that it would be (in general) ill-advised to attempt to exploit the 'head' of the Head Feature Convention as the inflectional locus for Percolation, and that any saving in conceptual apparatus that would follow from such a move is a false economy.

5.2. The morphological determinant assumption

Here the parallel with syntax is quite solid. The problem is that there is not the slightest indication that determinant is an adequate reconstruction of the notion of head in syntax. As my summary discussion in section 3 above indicated, the syntactic determinant is not identical to any of the constituents picked out by the notions that must play some role in syntax (the locus of inflection, the governor, and the determinant of concord).

Worse, even if the notion of determinant plays some role in syntax, it is conceptually dispensible, since syntactic determinants are simply semantic functions.

Now there are facts to be described here. An adequate description of word formation must somehow say that the category of a derived word is determined by the affix. But consider the case of compounding. However head-like the rightmost member of a compound might be for the purposes of locating inflectional morphology, it does not actually determine the category of the compound; noun-final compounds can be nouns (red-head), adverbs (bareback in She rode bareback and without any reins and uphill in They traveled uphill for six hours), or measure adjectives (three-dollar in a revolting three-dollar dinner), at least. What we should want to say about compounding is the very traditional proposal that there are a number of compounding rules. Each rule involves (a) the operation of concatenating two words, (b) these words belonging to specified categories, (c) with the result of the operation being a word of a specified category; moreover, with each rule is associated a principle of semantic interpretation for the compounds it provides.

Derivational affixes might indeed be more univocal in their morphological consequences than rightmost elements of compounds. What is at issue is the analysis of facts like the following: English -al combines with verbs to form nouns (arrival) and with nouns to form adjectives (herbal); -ful combines with nouns to form adjectives (careful) and with nouns to form nouns (handful); stressless -ate combines with nouns to form nouns (protectorate) and with nouns to form adjectives (passionate); and zero derivation creates a whole series of types of deverbal nouns and another of denominal verbs.

These derivational cases are much less convincing than the compound cases, because alternative analyses are available. It is certainly possible that each of the 'affixes' I have listed is really a pair of homophonous affixes, especially when we consider how the semantics of affixation is to be described. And several writers (including Lieber 1981, ch. 3) have denied that English has any rule of zero derivation for noun-verb pairs, though it does have homophonous noun-verb pairs in its lexicon.

Primarily on the basis of the compound cases, I conclude that morphological determination resides not in a formative, but in an operation, or rather, in a rule performing an operation; for compounding, the operation is the concatenation of two operands, and for affixal derivation, the operation is the concatenation of material at one end or the other of an operand. (A similar position can be maintained for syntactic determination as well; see especially the discussion in Carlson 1983.) The apparently determinant formative in compounding is only one of the operands, and the apparently determinant formative in affixal derivation is merely a concomitant of the operation. This approach permits a single formative to be an operand in distinct operations, or to be a concomitant of distinct operations.

5.3. Process morphology

A special problem arises with the inflectional-locus and morphological-determinant conception of head in languages with derivational 'process' morphology. What are we to say about a language (like several of those cited by Marantz 1982) in which reduplication serves as the sole mark of derivation? Or a language (like German) in which ablaut patterns can so serve? Similar questions arise for umlaut, tone shifts, and consonant shifts, and related questions attend infixation, discontinuous affixation (like the German past participle ge-...-t/-en), and subtractive formations.

A piece of derivational process morphology is an inflectional locus, and it is also a morphological determinant, but it isn't a simple formative that attaches to a base. For Percolation to function equally for process morphology as for affixation, we apparently have to abstract 'process morphemes' that combine with bases (as Joseph and Wallace (1984, sec. 1)) have observed in their criticism of Williams 1981). The Percolation treatment of inflectional loci and morphological determination apparently obliges us to hew to an agglutinative approach to derivational morphology, and so gives rise to such pseudo-questions as whether an instance of ablaut derivation in German involves a prefix or a suffix. Unadorned, the Percolation treatment calls up the full range of problems that process morphology posed for structuralist morphologists.

The recent literature contains several alternatives to an agglutinative treatment of process morphology. In a couple of these Percolation has a natural place, but in others the effect of Percolation is achieved by two independent mechanisms.

There is the nonagglutinative proposal of Williams (1981), who calls for 'headless' word formation in cases like the English noun-verb pairs exemplified by breath-breathe, life-live, and bath-bathe. Here the effect of Percolation is split, with Percolation itself doing the job for affixal derivation, and some other mechanism (not explored by Williams) doing the job for process derivation.

Another view, suggested by Lieber (1981), is that the allomorphs related by process morphology should simply be listed in the lexicon, and should be associated with one another by (nondirectional but context-sensitive) 'morpholexical rules'. Again, the effect of Percolation is split, with Percolation itself working in affixal derivation, and a feature-assignment mechanism working in process derivation (base forms are assigned the value [-F] and derived forms the value [+F], and the two are related by a morpholexical rule).

Another, proposed especially by McCarthy (1981, 1982), merges the 'long component' treatment of discontinuous morphology advanced by Harris (1951) with the 'autosegmental' approach to phonology proposed by Goldsmith (1976). In this 'prosodic" view of process morphology, process morphemes are represented separately from their bases, but the operation combining them is not agglutination, but rather superimposition; the base and the process morpheme lie on separate 'morphemic tiers', in a dimension orthogonal to the left-to-right linear ordering of segments and of affixal morphology. McCarthy has not, so far as I know, explored how Percolation would be managed in this framework, but it is easy to find a natural place for it, since derivative word formation in this framework is simply the combination of base and affix, in either of the two dimensions the framework provides. It follows that word structures are three-dimensional objects, rather than the two-dimensional tree structures of orthodox morphological analysis.

Marantz (1982) advocates a mixed approach, in which a prosodic analysis is appropriate for some phenomena, a morpholexical-rule analysis for others.

Still another idea (along the lines of Schmerling 1983) involves distinguishing, Montague-fashion, the notion of grammatical rule from the operation that the rule performs. Concatenation of material to (one end or the other of) a base is one operation that a rule could perform, but there are others: the rule could 'wrap' the base around some material (infixation); it could duplicate some of the substance of the base (reduplication); it could alter phonological features of the base in a systematic way (or simply mark the base as being subject to a particular phonological rule); or it could perform several of these operations in concert. One attractive feature of this approach is that it embodies the observation (much stressed by Lieber (1981)) that a single operation typically plays a number of diverse roles in the morphology of a language, often functioning in both derivational and inflectional morphology; a single reduplication operation, for instance, might be an exponent of a rule deriving causative verbs from adjectives, an exponent of a rule deriving intensive verbs from simple verbs, and an exponent of plural inflection on nouns. A less attractive feature is that, unless more is said, this framework permits powerful morphological 'transformations', of the sort that the approaches of Lieber, McCarthy, and Marantz were designed to avoid. In any case, the effect of Percolation would be achieved in this framework by assigning the 'head features' to the rule itself, hence to the semantic function associated with the rule; but there would in general be no affixes to serve as the 'heads' of anything, since affixes would merely be concomitants of the operation performed by the rule.

Only McCarthy's prosodic proposal and the Schmerling-style rule/operation proposal treat the morphological-determination aspect of Percolation in process morphology as a unitary phenomenon. The first requires a novel three-dimensional view of word structure but is otherwise consistent with a single principle of Percolation. The second allows the more traditional two-dimensional view of word structure but dispenses with Percolation entirely.

6. Conclusion

I have argued that there are several good candidates for the notion of 'head' in syntax, but that the syntactic determinant is not one of them. The head for the purposes of the Head Feature Convention is a variant of the inflectional locus, which *is* one of the good candidates.

In attempting to extend the Head Feature Convention to morphology, proponents of Percolation have carried over the idea that the head should be the inflectional locus--but the locus of inflection in morphology is at one of the margins of the word, not on any morpheme that could independently be argued to be the head of the word--and added the proposal that the head is also the morphological determinant.

Examining the idea that the morphological determinant is the head of a word, I argued that morphological determination resides not in formatives, but in rules performing morphological operations. Morphological determination is then, via the association between rules and semantic functions, associated with a particular semantic function.

It follows that the notion of 'head' incorporated into Percolation is inadequate for both of its intended purposes, (a) locating marks of inflection and (b) determining the category and morphosyntactic features of a word.

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Why -skI?

A Study of Verbal Aspect in Conchucos Quechua

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0. Introduction

The verbal suffix -skI of the Conchucos dialect of Ancash Quechua[1] is completely absent in the dialect of neighboring Huaraz. Impressionistically speaking, -skI might be said to "characterize" the Quechua of Conchucos. Although it is beyond the scope of this present paper to determine precisely why -skI is restricted almost exclusively to the Conchucos dialect and neighboring areas,[2] the specific function which -skI performs calls for more precise examination. The claim of this paper is that -skI performs a specific and vital function in the modal-aspectual system of the verb in the Quechua of Conchucos. Moreover, the complex role which -skI plays in this dialect indicates the likelihood of similar complexities in the other Quechua dialects which employ this suffix. Any further insight into this complex system of verbal derivation which all of the Quechua languages share is expedient for adequate analyses of the languages within the Quechua family, and is likely also to provide insights into the verbal morphology of typologically similar languages.

1. About Quechua

Quechua is a language family with a number of members, rather than a single language with a number of dialects. There are approximately six million speakers of these languages, located geographically from Colombia, in the northern portion of South America, to the province of Santiago del Estero, in Argentina, to the south. Quechua is centered along the Andean chain and occurs in adjacent jungle areas, such as the Quechua of the Napo in Ecuador and the Quechua of the Pastaza in Peru.

The Quechua languages have been subclassified by Torero (1964) and Parker (1963) into Quechua I and II and Quechua B and A, respectively. The languages in the I, or B, group differ from the languages in the II, or A, group to roughly the same extent that languages in the Romance family, such as French and Portugese, or Spanish and Portugese, differ from one another.

Ancash Quechua belongs to the I, or B, group. Considerable variation exists however, within Ancash itself. With regard to certain phonological features, both the most conservative of the Quechua dialects, that of Sihuas, and the most innovative dialect, that of Huaraz, are reported to be located in Ancash.[3] Thus, within a relatively small geographical area, considerable linguistic variation has arisen. This variation is typical of the entire Quechua B area, which spans the mountains of central Peru. In Ancash, the Conchucos dialect is considered to be less innovative than the Huaraz dialect, yet by no means as conservative as the Sihuas dialect.

A popular notion in Peru has been that all varieties of Quechua are descended from the Cuzco language spoken by the rulers of the Inca Empire at the height of its power. This was generally accepted as fact until the 1960's, but linguists and scientists have been realizing, especially since studies of the central dialects have been made available, that the approximately thirty dialects of Quechua most likely could not have evolved in the only five centuries separating the Spanish conquest and the present day. The conclusion is that Quechua was spoken in Peru long before the conquest of the Incas and has continued its evolution as a viable language to the present day.

Conchucos Quechua is polysynthetic and agglutinative, and words may be quite long:

(1) maqa-kU-maa-na-yki-paq (19 phonemes, 5 suffixes)
hit-refl-/1-nml-2P-PUR

'in order for you to hit me'

(2) reqi-naku-shqa-ntsik-kuna-ta (23 phonemes, 5 suffixes)
know-recip-part-12P-pl-ACC

'(to) all of us that know one another'

The language allows no prefixes, but there are approximately ninety productive suffixes. There is no theoretical maximum number of suffixes that a word may contain, although more than six or seven is infrequent.

The language is characterized also by a total regularity of morphological processes, as in the verb conjugations, and an absence of articles, prepositions, conjunctions (except for Spanish borrowings), and relative pronouns. The predominant word order is a relatively free SOV, with the accompanying ADJ:NOUN sequence. A small lexicon is compensated for by the productive use of the suffixes. Most lexemes can be assigned to either a substantive or a verb class, although there are some "ambivalents" which can belong to either, for example, tsaka 'bridge' and tsakay 'to bridge'. A few particles, such as ama 'prohibitive' and aw 'yes' are assigned to neither class.

2. The Quechua verb

All verb roots and all non-final verb suffixes end in a vowel. Final suffixes can end in either a vowel or a consonant. It is not uncommon for a verb to have such a large number of derivational and inflectional affixes that it corresponds to an entire English sentence:

(3) rika-chaka-ykaa-ku-ntsik
see-diffuse-impfv-refl-12

'We are looking all around.'

The order of the derivational suffixes is somewhat free, while the order of the inflectional suffixes is basically fixed. Derivational suffixes must, however, precede the inflectional suffixes:

ROOT DERIVATIONAL SUFFIXES INFLECTIONAL SUFFIXES

Ancash Quechua has about twenty-five derivational suffixes, almost all of which are completely productive.

Certain suffixes, of which -skI is one, are subject to a phenomenon of vowel modification that occurs when certain other suffixes follow: morphophonemic forelowering. The following formalization is adapted for Ancash Quechua from Weber (1976:79):[4]

$$\begin{bmatrix} +\text{syllabic} \\ +\text{high} \\ -\text{low} \\ -\text{back} \end{bmatrix} \text{------} \begin{bmatrix} -\text{high} \\ +\text{low} \end{bmatrix} \quad \left\{ \begin{array}{ll} \text{-ma:} & \text{'/1'} \\ \text{-mU} & \text{'trans/cislocative'} \\ \text{-tsI} & \text{'causative'} \\ \text{-pU} & \text{'benefactive'} \end{array} \right\}$$

SUFFIX FINAL

Few pairs of the derivational suffixes are mutually exclusive or obligatorily co-occurring, thus a high number of combinations is possible. The same suffix may even occur twice on the same verb, although this is rare,[5] and it is possible for no derivational suffix to occur at all. Functions of these affixes include the mapping of mood, aspect, voice, and number. Consider the following likely combinations:

Four Derivational Suffixes:

(4) Tsay-kuna llapan maytsika runa
that-pl all many person

qori-kU-skI-yaa-mu-r-ni-n-qa...
gather-refl-perf-pl-afar-adv-0-3-TOP

'They all, when all the many people have gathered...'

Three Derivational Suffixes:

(5) Tsay-mi tsay Shilla Hirka-chaw-qa
that-AFF that Shilla hill-loc-TOP

saachi-ku-ykaa-yaa-raa...
fertilize-refl-impfv-pl-past

'Then on that Shilla Hill we were fertilizing.'

Two Derivational Suffixes:

(6) Tsay-chaw alli timpu-rkU-tsi-sha-na-m
that-LOC good boil-up-caus-part-now-AFF

maki-ntsik-wan shupra-rkU-ntsik.
hand-12P-COM peel-up-12

'Then when we have boiled it up well, we peel it with our hands.'

One Derivational Suffix:

(7) Y tsay-ta-m timpu-tsi-ntsik.
and that-ACC-AFF boil-caus-12

'And we boil that.'

No Derivational Suffix:

(8) Pay miku-n. 'He/She eats.'
3 eat-3

3. Previous studies of the Quechua derivational suffixes

In recent years, three Quechua linguists in particular have studied the derivational suffixes in Ancash, specifically in Huaraz Quechua: Gary Parker (1973), Germain Swisshelm (1974), and Helen Larsen (1976). In this section, I will briefly review what each of these has to say about them.

Parker (1973:1) defines the "derivational" suffixes in Quechua as "those that appear between the verb root (stem) and the suffixes of tense, subordination, nominalization, and person." In short, the derivational suffixes can loosely be defined as *all* of those suffixes which occur between the Quechua root and the inflectional suffixes. Parker also refers to them as "deverbative verbalizers," indicating by this terminology that they derive verbs from verbs.

Since *-skI* does not appear in Huaraz Quechua, Parker makes only passing mention of its occurrence in the provinces of Eastern Ancash, positing a tentative definition of "resisted action." According to this definition, *-skI* is in opposition to the suffix *-rkU*, "unresisted action," in a metaphorical sense. (*-rkU* is a "directional" affix indicating "up" in its basic meaning but with certain metaphorical submeanings.)

Swisshelm divides the derivational suffixes into two classes arranged by their order of occurrence on the verb. The derivational suffixes are "los sufijos que, agregados a un tema verbal, producen otro verbo, modificando su significado en alguna manera. Puede ocurrir un solo sufijo derivacional o varios de ellos en combinación." (The derivational suffixes are the suffixes which, added to a verb stem, produce another verb, modifying its meaning in some way. One derivational suffix may occur or several in combination.) Swisshelm's descriptive analysis of each of the derivational suffixes is thorough, especially regarding co-occurrence restrictions. His approach highlights a tendency for the more "influential" suffixes, that is, the suffixes most likely to alter significantly the meaning of the verb itself, to occur closer, if not adjacent to, the verb root. In some instances, he indicates, the suffix has become so closely allied with the verb root that the form has become frozen to the root, which can then no longer appear unaccompanied:

(9) sha - mu - y -----------→ shamu -y
move-to:here-imp come-imp

(10) *shay

Swisshelm's analysis does not, however, capture generalizations about the interrelated behavior of the suffixes. He tells us *what* happens, but he does not tell us *why* this might be the case. Moreover, since, as with Parker, his study is restricted to the Quechua of the Huaraz area, *-skI* is not analyzed.

Larsen follows a structuralist approach similar to Swisshelm's, similarly rich in data but lean on explanation. An insightful observation in her paper is that the derivational suffixes function on more than one level in the discourse (1976:35). She concludes that her study demonstrates that each of the derivational suffixes has a function at two levels: the first is the clause, and the other, the discourse. The precise nature of the functions she is referring to is not entirely clear from the study, however, the relevance of the larger context to the particular occurrences of the suffixes is worth bearing in mind for the purpose of analyzing *-skI*, which, again, Larsen does not mention in her study.

1. Previous analyses of -skI: a 'modal' suffix

Parker (1973), as mentioned above, analyzed *-skI* as denoting "resisted action" by the subject or by the object. This included also the notion of urgency or unexpected action, and the further expectation that, if -skI and -rkU were to be interchanged in the same verb, the form with -skI would always indicate greater speed, less facility, and less sociability. Parker felt that -skI needed to be studied by comparing its use with the uses of other derivational suffixes, especially -rkU and -ykU, which have "modal" functions of a comparable degree of abstraction. The term "modal" is not clearly defined, nor is the analysis of -skI defended on anything but conjectural grounds.

Snow (1972) is the one paper devoted exclusively to the "modal" suffix -skI in Ancash Quechua.[6] He quotes Torero's statement that -skI "expresa más bien la acción consumada o, con formas de imperativo, la urgencia de realizar la acción." (expresses, rather, consummated action, or, with imperative forms, the urgency of realizing the action). Snow also cites Sola's label for -skI as "directive," indicating that "la acción tiene un objecto o meta." (the action has an object or goal.) Snow's own analysis is that "a verb occurring with -skI refers to an activity or state of affairs which is unanticipated and/or affective."(1972:17) "Nevertheless,"he adds, "it is the element of surprise conveyed by -skI which predominates," (23) and "extralinguistic contextual factors play an important role in the linguistic usage of the modal suffix -skI." (26) Snow calls to attention the fact that -skI and the imperfective affix -ykaa are mutually exclusive, but his analysis of -skI is basically a subjective one in which the possible grammatical functions of aspect and modality are not explored.

Weber (1976) also refers to a subset of derivational suffixes designated as "modals." "Modal refers to a class of suffixes which occur close to the verb stems and change the meaning of the stems in temptingly predictable (but ultimately unpredictable) ways." (96) For each of these suffixes, a directional meaning is posited which survives only in certain isolated forms. In their present-day productive usages they vary considerably from those basic meanings; sometimes these are predictable "metaphorical" uses as mentioned by Parker, other times they defy precise explanation. The modal suffixes common to most dialects of Quechua I, or B, are:

Modal	Dir.Meaning	Ex:Dir.Use	Ex:Extended Use
-ykU	in	yaykuy 'to enter'	hitaykuy 'to throw w/force'
-rkU	up	warkuy 'to hang up'	mikurkuy 'to eat up'
-rpU	down	yarpuy 'to go down'	wiñarpuy 'to pour'
-rqU	out	yarquy 'to go out'	qarquy 'to kick'

Weber's characterization of the "modal" suffixes is the clearest to date. Although a specific directional meaning cannot be posited for -skI in the same way as for the other suffixes in the group, its occurrence close to the verb stem and its unpredictable behavior seem to be sufficient reason for including it in the class of "modal" suffixes. However, the fact that this is then the only "modal" suffix for which a more basic (directional) meaning has not been posited leads us to suspect that a more precise, basic meaning, even if not a directional one, could be posited for *-skI*. *-SkI* has thus far been given convenient, somewhat impressionistic labels. These labels ameliorate perhaps the potential difficulties caused by not having any definition at all for *-skI*, but they do not adequately define the suffix. One suspects that, even with the given directional meanings, similar situations exist for the other "modal" suffixes as well. What is needed for our present purposes, however, is a clear testable hypothesis for *-skI* in Conchucos Quechua.

5. *What is modal?*

Longacre (1976) defines modalities as "the expression of desire/intent, obligation/necessity, and ability...the special desiderative or intentive forms of verbs." Since this definition allows for "special desiderative or intentive forms of verbs," it is broad enough to encompass the class of so-called "modal" suffixes in Quechua. The requisite broadness of this definition, however, highlights the necessity of pinpointing a basic function for *-skI*. Previous studies have concentrated on metaphorical, even stylistic, analyses of the suffix, determined in large part by the particular context in which it occurs. While the likelihood of such metaphorical uses dependent upon context is certainly to be expected, an analysis which posits such functions, without first exploring the possibility of an underlying unity in meaning, may fail to capture significant generalizations. To attempt to define the precise nature of a Quechua suffix by explaining all of its occurrences impressionistically is perhaps useful, but, nevertheless, analytically inadequate.

What I propose is that *-skI* has a basic grammatical function in Quechua, and this function must be defined before any further attempt is made at defining metaphorical or stylistic uses according to context. In this way, the analysis will emanate from a basic grammatical definition of *-skI*, and move on from there to the metaphorical, or secondary uses. In this approach, context is not ignored, for the suffix is to be considered in each particular context in the light of the defined basic use. The secondary uses in their various contexts should, however, be logically traceable back to the primary definition. If the primary definition is adequate, then each instance of *-skI* should reflect this in a logically direct way. If some instance of *-skI* cannot be traced back to the primary definition, then either this primary definition needs to be adjusted accordingly, or the possibility of more than one *-skI* in Conchucos Quechua needs to be considered. The possibility which should only be considered when all others have been exhausted is that *-skI* is merely a "catch-all" morpheme whose many and varied uses cannot be unified in some way according to a common definition. On the other hand, the search for a common *Grundbedeutung* based on the assumption that all of the present-day *-ski*'s are *historically* derived from the same source, should not lead to an a priori decision that all of the uses of

-skI must be synchronically traceable to a common source meaning. Nevertheless, the notion of a word whose basic meaning is extended and reinterpreted according to its varied contexts is basic in linguistics. The same notion should be applicable to an affix with a definable grammatical function.

6. Towards an aspectual definition of -skI

In this section, -skI will be examined in the more readily definable contexts in which it occurs. My hypothesis is that the basic function of -skI is as a perfectivizing suffix on the verb; moreover, that this is a reasonable explanation for its behavior in a variety of otherwise puzzling contexts.

6.1. What is aspect?

The study of aspect has suffered from a lack of distinctive definition. General agreement exists in the notion that aspect does have something to do with temporal constituency, but that it is not to be equated with tense.[7] Still, definitions of aspect have traditionally tended to be imprecise and elusive, circular and contradictory to one another at their worst, and highly individualistic at their best.

The most helpful definition which I have found so far is in Comrie (1976), where aspects are considered as "different ways of viewing the internal temporal constituency of a situation." (1976:3) Whereas tense is concerned with relating the time of the situation referred to to some other time, such as the moment of speaking, aspect, in Comrie's framework, is concerned with the temporal "make-up" of a particular situation, without reference to other temporal frameworks.

The most basic opposition within the aspectual system is the perfective/imperfective opposition. In its broadest definition, perfective views dynamic situations as a complete whole, and imperfective, as situations in progress, from within. Perfective aspect, then, is the outsider's point of view; imperfective, the insider's point of view. In perfective aspect, "the whole of the situation is presented as a single unanalysable whole, with beginning, middle, and end rolled into one; no attempt is made to divide this situation up into the various individual phases that make up the action." (1976:3) [8]

Comrie's definition of aspect is not unique in its delineation of the perfective/imperfective opposition as the most basic. Its uniqueness rests rather in the breadth of viewpoint which can be considered to be perfective. In addition, the clarity with which Comrie explains his terms makes his definition the most testable of the plethora of options available as definitions for aspect. Henceforth, then, any reference to the perfective aspect or to perfectivity in general in this paper will assume Comrie's definitions of the terms, not because these are necessarily the only ways to define them but because they seem to be the most suitable for the analysis of language data at this point.

6.2. Comments on methodology

Some further comments about analytical procedure are in order here. In the first place, some of the judgments about the use of -skI in specific instances are of necessity impressionistic: in any communication situation certain interpretive presuppositions must be made by the hearer. On the other hand, conclusions about -skI are based on the more obvious appearances, and observations are cross-linguistically supported by, for example, Comrie's evidence from a number of languages.

6.3. -skI and the imperfective

Since one of the clearest oppositions in aspectual systems is between the perfective and the imperfective, if -skI is indeed the perfective aspect marker for Conchucos Quechua, one would not expect it to co-occur with the marker of imperfective aspect. This is precisely the case. Moreover, the mutual exclusivity of the two is all the more noteworthy since Quechua verb morphology appears to have very few restrictions on combinations of derivtational suffixes. Furthermore, while -ykaa has not been found to cooccur with -skI, it does co-occur freely with other "modal" suffixes such that the co-occurrence restriction with -skI is all the more noticeable. From this evidence alone, one could suggest that -skI does not cooccur with the marker of imperfective aspect since it is a marker of perfective aspect. Consider the following:

(11) Shonqo-:-paq-naw ka-pti-n-mi ashi-ykaa-mu-:.
heart-1-PURP-SIM be-adv-3-AFF seek-impfv-to:here-1

'I am looking for the one (the woman) who will be for my heart.'

(12) *Shonqo-:-paq-naw ka-pti-n-mi ashi-ykaa-skI-mu-:.
heart-1-PURP-SIM be-adv-3-AFF seek-impfv-perf-to:here-1

(13) Kanan-qa ka-yka-n kostumbri.
today-TOP be-impfv-3 custom

'Nowadays there is a custom.'

(14) *Kanan-qa ka-yka-skI-n kostumbri.
today-TOP be-impfv-perf-3 custom

6.4. -skI and completion

Consider now the following sentences, all involving the completion of an event:

(15) Miku-skI-r-ni-n shamu-naq kasha-ku-q
eat-perf-adv-0-3 come-narpst get-:thorns-medrefl-sub

turuna kasha-man.
thornbush get:thorns-GOAL

'Having eaten, he came to the thornbush to get thorns.'

(16) Tsay-shi koneehu-ta kacha-skI-n atoq.
that-REP rabbit-ACC let:go-perf-3 fox

'Then the fox catches (completive) the rabbit.'

(17) Tsay-pita-m misa-ta wiya-skI-r-ni-n-qa
that-after-AFF mass-ACC hear-perf-adv-0-3-TOP

ranti-pu-ntsik.
buy-ben-12

'After having listened to the mass, we go shopping.'

In the first example, taken from a story about the exploits of a very cantankerous and unpleasant man, the *-skI* clarifies the fact that he did not come to the thorn bushes until he had finished eating. Without *-skI*, we might assume from the context that he had finished eating, but the *-skI* unambiguously marks the completion of the event. In the second example, taken from an animal folk tale about a fox and a rabbit, the *-skI* indicates that the rabbit was indeed sent away, that is to say, he really left. Without *-skI*, again we might assume his departure; on the other hand, the placement of *-skI* on the verb eliminates all doubt. In the third example, taken from a monologue about folk customs in the Andes, the narrator indicates that trading around among the people does not begin until after the mass is over (here, a mass for the dead.) Again, *-skI* is attached to the verb whose action is completed.

6.5. *skI* and rapidity

A grammatical marker of perfective aspect may be used to indicate shortness of duration of an event as well as its completion. The following sentence is taken from a monologue in which the speaker is describing the time when, in travelling home from a regional fiesta, his belongings were completely "whisked" away from him in a moment, before he had a chance to do anything about it. *-SkI* is appended to the verb root *apa* meaning 'take.' *Apa* with the suffix *-mu* means simply 'to take away.' The speaker insisted, however, that this taking away was so brisk that it happened too soon for him to do anything about it, in fact, before he was aware of what was going on. One would strongly suspect, then, that *-skI* on the verb indicates brisk completion:

(18) Llapa-n qellay-ni-:-ta ichik ichik llatsapa-:-ta
all-3P money-0-1P-ACC little little clothing-1P-ACC

llapa-n-ta apa-skI-mu-n kaarru-n-chaw.
all-3P-ACC take-perf-afar-3P car-3P-LOC

'All of my money, all of the little clothing I have,
everything he took away in his car.'

Thus *-skI* may be used to indicate not only telicity, but rapidity, functions which one would expect a typical marker of perfective aspect to perform.

-SkI may also appear on verbs indicating the sudden inception of an event or state which is not necessarily of short duration. In such contexts, the inception of the event is not in focus, but, rather, the event as a totality. The following sentences illustrate this function of *-skI*:

(19) Tsay-man-shi huk atoq-qa rupa siki
That-GOAL-REP one fox-TOP burnt bottomed

yuri-skI-r.
appear-perf-adv

'Then a 'burnt-bottomed' fox appeared.'

(20) Maki-:-chaw ka-na-n-ta qonqa-skI-pti-n...
hand-1P-LOC be-nml-3P-ACC forget-perf-adv-3

'Having forgotten that it should have been in my hand..'

The fox of (19) appeared on the scene quite unannounced, but, according to the continuing narrative, he clearly stayed around for awhile. Likewise, what was suddenly forgotten in (20) remained forgotten for a period of time.

Conchucos Quechua shares with other Quechua dialects in central Peru the inceptive/punctiliar suffix *-rI*, which may be used to emphasize the inception of an event. *SkI* may not appear in such contexts where the inception of the event is in focus. Consider the following:

(21) Kwenta-ri-shayki
tell:story-incep-1/2:fut

'I am going to tell you a story.'

(22) *Kwenta-skI-shayki

(21) is found typically at the beginning of narratives. (22) is ungrammatical.

Because of evidence from Conchucos Quechua that *-skI* is used to indicate completed action and action looked upon as a single whole without regard to inner complexity, it can be considered to be a marker of perfective aspect on the verb.[9]

7. -SkI and transitivity

In this section, I will show how the analysis of *-skI* as a marker of perfective aspect is further supported by its behavior as a component feature of High Transitivity and by its covariance with other features of High Transitivity.

Transitivity, according to Hopper and Thompson (1980:251), "is traditionally understood as a global property of an entire clause, such that an activity is 'carried over' or 'transferred' from an agent to a patient." Hopper and Thompson codify what has been intuitively understood into explicitly defined components. The parameters of Transitivity, each indicating "a different facet of the effectiveness or intensity with which the action is transferred from one participant to another," are as follows:

	High	Low
A. Participants	2 or more participants, A and 0.	1 participant
B. Kinesis	action	non-action
C. Aspect	telic	atelic
D. Punctuality	punctual	non-punctual
E. Volitionality	volitional	non-volitional
F. Affirmation	affirmative	negative
G. Mode	realis	irrealis
H. Agency	A high in potency	A low in potency
I. Affectedness of 0	0 totally affected	0 not affected
J. Individuation of 0	0 highly individuated	0 non-individuated

The Transitivity Hypothesis (1980:255), supported by data from a wide variety of languages and reported to have universal applicability, is as follows:

> If two clauses (a) and (b) in a language differ in that (a) is higher in Transitivity according to any of the features 1A-J, then, if a concomitant grammatical or semantic difference appears elsewhere in the clause, that difference will also show (a) to be higher in Transitivity.

Transitivity is a continuum, and its components co-vary on a scale from High to Low. Since Transitivity, is, moreover, a discourse-determined global property of an entire clause, even a traditionally defined "transitive" clause may be more or less transitive and a traditionally defined "intransitive" clause may be more or less transitive as well.

This notion is particularly helpful in the analysis of *-skI*. Of over two hundred appearances of *-skI* examined in preparing the present paper,[10] roughly two out of three of the clauses containing the suffix were obviously transitive according to the traditional definition. The rest, then, were "intransitive" according to the traditional definition, yet clearly exhibited certain transitive properties. Quechua clauses, then, do not always settle into a comfortable transitive/intransitive dichotomy, as traditionally defined by the presence or absence of an overt direct object. This is perfectly acceptable if Transitivity is defined as a continuum.

The blurring of the transitive/intransitive distinction is especially evident with Quechua verbs such as tinkuy 'to meet'. In German or in English, the equivalent verb takes the accusative case or the direct object position, respectively, and is thus clearly transitive according to the traditional definition:

(23a) Ich habe ihn getroffen.
I have him met

(23b) I have met him.

The features exhibiting High Transitivity in (23a) and (23b) are:

(23c) Participants: two
Kinesis: action
Aspect: telic
Punctuality: punctual
Affirmation: affirmative
Mode: realis
Individuation of O: highly individuated

In Conchucos Quechua, on the other hand, tinkuy takes the comitative case and is technically intransitive according to the traditional definition of transitivity:

(24) Tinku- SKI -: pay-wan 'I have just met him.'
meet -perf -1 he -COM

Evaluating the clause according to Hopper and Thompson's parameters for Transitivity, we see that it is identical to (23c) above. The Conchucos Quechua sentence shares the same number of High Transitivity features as English and German, namely seven. This particular object in Quechua is not marked with the Accusative Case, yet, semantically, it is referential and definite in the same sense as the Object in the English and the German examples. In each case, degree of Volitionality of the agent is not clear without reference to the larger context of the utterance, and Agency is probably low, in that a transfer of an action as such does not seem to be taking place. In summary, all three clauses rank on the High side of the Transitivity scale.

Hopper and Thompson's Transitivity Hypothesis predicts that only when the Transitivity features obligatorily co-occur in the morphosyntax or semantics of a language will these paired features always be on the same side of the Transitivity scale. Evidence from Conchucos Quechua indicates that when -SkI occurs, it will indicate perfective aspect, but not necessarily the reverse. The data suggest that there is reason to suspect that -skI is not the only marker of perfective aspect.[11] In certain cases, perfectivity may even be understood from the lexical meaning of the verb itself.

-SkI is, then, optional in the strict sense of the term, and, therefore, the Transitivity Hypothesis does not predict that it will necessarily co-occur with other features of High Transitivity. I would predict, however, that, for Conchucos Quechua, this is the case. Where skI appears, so will other features of High Transitivity.

In Hopper and Thompson's framework, "Aspect is systematically correlated with the degree of Transitivity of the verb: if the Aspect is perfective, the interpretation - other things being equal - has properties allowing the clause to be classified as more transitive; but if the Aspect is imperfective, the clause can be shown on independent grounds to be less transitive."

Consider the following two examples, the first previously introduced in section 6.3:

(11) Shonqo-:-paq-naw ka-pti-n-mi
heart-1P-PUR-SIM be-ADV:SS-3-AFF

ashi-YKAA-mu-u.
look-IMPFV-to:here-1

'I am looking for the one who will be for my heart.'

(25) Hipash-pis choolu-pis ashi-naku-SKI-r
girl-too guy-too seek-recip-perf-adv

kuya-naku-SKI-r-ni-n kiki-n-kuna-lla-na
love-recip-perf-adv-0-3 self-3P-pl-just-now

mama-n-kuna-ta choolu-kaq aywa-n willa-ku-q.
parent-3P-pl-ACC guy-def go-3 tell-refl-narpst

'Both the young woman and the young man having found each other, having fallen in love with each other, on their own go to tell the young man's parents.'

A comparison of (11), with -ykaa, and (25) with -skI for features of high transitivity yields the following:

(11) -ykaa	(25) -skI
O highly individuated	All features of High Transitivity

The high telicity indicated by the suffix -skI coincides with the forces pulling the clause towards the Transitive end. If, however, no -skI is on the verb, the other forces will still tend to pull the clause towards the transitive end, as illustrated in the Transitivity configuration for (26), which includes all of the High Transitivity features as does (25) except for the telic Aspect:

(26) Mana warmi-kaq ni ollqo-kaq reqi-naku-ya-q-tsu ni
NEG woman-def nor man-def know-recip-pl-narpst-NEG nor

chiina-pis ni choolu-pis ni ima-naw ka-ya-nqa-n-ta.
girl-too nor guy-too nor what-SIM be-pl-nml-3-ACC

Sinoo-qa mama-n-kuna-lla ashi-naku-ya-q.
rather-TOP parent-3P-pl-just seek-recip-pl-narpst

'Neither the young woman nor the young man used to know each other, neither girl nor guy, by no means. Rather, their parents would choose them.'

The following two clauses also differ only in the feature of telicity. Compare the clauses in the following example from narrative text for components of High Transitivity:

(27) Tsay-chaw-ni (a) qatswa-tsi-ntsik.
that-LOC-AFF dance-caus-12

(b) Tushu-skI-tsi-ntsik.
dance-perf-caus-12

'There we have them dance. We really make them dance.'

(a) Participants: two
Kinesis: action
Aspect: atelic
Volitionality: volitional
Affirmation: affirmative
Mode: realis
Agency: A high in potency

(b) Participants: two
Kinesis: action
Aspect:telic
Volitionality: volitional
Affirmation: affirmative
Mode: realis
Agency: A high in potency

Considering the evidence in the light of Hopper and Thompson's statement that "Aspect is systematically correlated with the degree of transitivity of the verb," (1980:271), the hypothesis that -skI marks perfective aspect is further substantiated. When the verb is clearly transitive, -skI will intensify, or "perfectivize" that transitivity; when the verb is less transitive, -skI will push the clause towards higher transitivity.

8. *-SkI in the discourse*

In their discussion of Transitivity, Hopper and Thompson emphasize the determining role of the discourse context on the level of Transitivity of individual clauses. Thus far, I have considered *-SkI* within its immediate morphological and clausal environment, with only occasional references to the wider context in which the suffix is uttered. According to Hopper and Thompson, however, the defining properties of Transitivity are discourse-determined, and explained on the basis of pragmatic function. This section will explore some of the wider contexts of which the suffix *-skI* is a part in order to illustrate how *-skI* is discourse-determined, and how this reinforces the analysis of the suffix as a perfectivizer.

Out of a sample corpus of eighteen transcribed texts of Conchucos Quechua, only one is without a single instance of *-skI*. This conspicuous absence demands explanation, especially since the same speaker employs the suffix liberally in other contexts. The reason becomes apparent when the genre of the discourse is identified: hortatory. It is an exhortation (by a godfather to his godson, pleading with him to change his style of living). The overriding theme in the monologue is the uncertainty of the boy's future. Questions with open-ended answers are frequent:

(28) Pashku, ima-ta-ta-m wiya-: qam-pita?
Pashku what-ACC-??-AFF hear-1-you-ABL

'Pashku, what is this I hear about you?'

The use of conditional (irrealis) mood, which correlates with Low Transitivity, is frequent as well:

(29) Qam-qa muna-nki-man-tsuraq qam-wan mamaa-ni-ki-wan
you-TOP want-2-cond-?? you-COM mother-Ø-2P-COM

pani-ki-wan ka-na-n-ta?
sister-2P-COM be-nml-3P-ACC

'Wouldn't you like your mother and your sister to be with you (in heaven someday)?' (Implied: you must not...)

(30) Kanan-ta-m apa-q-man karsel-kuna-man
today-ACC-AFF take-purp-cond jail-pl-GOAL

qayku-tsi-mu-q-ni-ki kay-naw ka-pti-ki.
put:in-caus-to:here-sub-Ø-2 this-SIM be-adv-2

'I might even have to take you to the jail now and have you thrown in if you keep on like this.'

The prospects of the boy changing his ways are unlikely, and the speaker gives no indication that he expects the boy to respond to his exhortation:

(31) Qam muna-nki-man-tsuraq tsay-naw ka-y-ta?
you want-2-cond-?? that-SIM be-nml-ACC

Imanir-tan tsay-naw ka-nki?
why-?? this-SIM be-2

'Do you really want to be like that?' (Maybe you do)
'Why are you like that?'

Perfective aspect would be expected in a context of affirmation, certainty, and completeness of action. If a climate of negativity, uncertainty, and non-action is the prevailing context, the absence of -skI is reasonable and serves to further confirm its identity as a marker of perfectivity.

In contrast to the above discourse, procedural texts have many occurrences of -skI. Its meaning in this context could be informally stated as : "having finished that, you then go ahead and do the next step." In other words, -skI marks sequence in the steps of procedural discourse by indicating the successful accomplishment of each phase.

Sequencing is expressed in the text by a pattern of clause chaining in which the final verb of a sentence, focusing on the enactment of a specific step in the procedure, is repeated at the beginning of the next sentence in an adverbial clause in which -skI is suffixed to the verb. The following is an excerpt from a text which explains how to prepare a special kind of boiled wheat which is a typical Andean food:

(32) Yacha-tsi-shayki llushtu-y-ta.
know-caus-1/2fut peel-nml-ACC

Kay-naw-mi llushtu-ntsik.
this-SIM-AFF peel-12

Uchpa-ta sirni-ntsik.
ash-ACC sift-12

Uchpa-ta sirni-SKI-r-ni-n-mi,
ash-ACC sift-perf-adv-Ø-3-AFF

yaku-man wiña-rpu-r-ni-n-qa,
water-GOAL add-in-adv-Ø-3-TOP

waami-kacha-SKI-ntsik.
dissolve-duffuse-perf-12

Qaywi-ntsik, qaywi-ntsik alli maki-ntsik-wan
beat-12 beat-12 good hand-12P-COM

Qaywi-SKI-r,
beat-perf-adv

tsay ruri-n-kaq-chaw qori-kU-SKI-pti-n-mi,
that inside-3P-def-LOC gather-refl-perf-adv-3-AFF

llapin llapin hipi-r-ni-n, wika-pa-ntsik.
press press take:out-adv-Ø-3 throw-ben-12

Tsay killimshan-kaq-mi shanka wañu-shqa,
that carbon:pieces-def-AFF carbon dead-part

tsay ñuchu shanka-ta tikra-kU-SKI-mu-pti-n,
that tiny carbon-ACC change-refl-perf-to:here-adv-3

yapay harneeru-wan shuyshu-ntsik.
again sifter-COM strain-12

Shuyshu-SKI-r-qa, wika-pa-ntsik.
strain-perf-adv-TOP throw:out-ben-12

Hitari-SKI-ntsik mana-na alli-ta-qa.
throw:out-perf-12 NEG-now good-ACC-TOP

Y tsay-ta-m timpu-tsi-ntsik.
and that-ACC-AFF boil-caus-12

'I am going to teach you how to prepare boiled (peeled) wheat. Like this we peel the wheat: We sift (the) ashes. When we have sifted the ashes, adding them to (the) water, we dissolve them. We beat it, we beat it well with our hands. When we have beaten it, pressing down what has gathered at the bottom, taking it out, we throw that away. Those pieces of carbon which have been burned and become very fine, in the same way we strain them. When we have strained them, we throw them out. We throw out that whch is not good. And then we boil it.'

A parallel use of -skI is to mark sequence in a narrative. Increasing action, or kinesis, is accompanied by increased use of skI. Within the context of the discourse, this correlates with increased foregrounding of the action as it builds to a climax, which is precisely what Hopper and Thompson would predict for situations of High Transitivity:

(33) Tsay-kuna-ta tari-SKI-r-ni-n-qa
that-pl-ACC find-perf-adv-Ø-3-TOP

deklara-tsi-q:
declare-caus-narpst

"Kay-naw-pa runa-mahi-ki-ta rura-ru-yki."
this-SIM-GEN person-accom-2P-ACC do-recpst-2

Ni-pti-n-qa,
say-adv-3-TOP

patsa-na qaya-raa-kU-ya-ra-n.
fear-now cry-stat-refl-pl-past-3

Qaya-raa-kU-SKI-r-ni-n-qa,
cry-stat-refl-perf-adv-Ø-3-TOP

reqe-ya-ra-n rasun-pa wañu-tsi-paku-ya-nqa-n-ta.
know-pl-past-3 truth-GEN die-caus-dir-pl-nml-3-ACC

'When they found them they declared: "This is what you did to your fellow man." When they said that, they cried out with fear. When they cried out in fear, they (the first group) recognized that they (the second group) had done the killing.'

The repeated use of -skI at the point of climax creates the kind of foregrounding to which Hopper and Thompson refer. Notice the four -skI's in the following sentence:

(34) Kandaadu-ta chura-SKI-r-ni-n kapcha-SKI-r-ni-n-qa
padlock-ACC put-perf-adv-Ø-3 lock-perf-adv-Ø-3-TOP

wahi-:-ta llaki-SKI-r-ni-n
house-1P-ACC be:sad-perf-adv-Ø-3

imarikoq tuma-pa-SKI-r-ni-n
considerable circle-ben-perf-adv-Ø-3

kuti-pa-mu-:.
return-ben-to:here-1

'Having put the padlock on and locked it, feeling very sad about (leaving) the house, after having walked around it (one last time), I went back.'

-SkI may also be used to mark temporal sequence in a real-life description of a personal experience, as in the following account by a participant in a Quechua Writers' Workshop describing his journey to this event:

(35) Noqa-ta qaya-tsi-yaa-ma-rqa-n radio-pa-mi kay
I-ACC call-caus-pl-/1-past-3 radio-GEN-AFF this

Huari marka-man.
Huari town-GOAL

Tsay-pita yarqa-yka-mu-rqa-: Llamellin-pita
this-ABL leave-dir-to:here-past-1 Llamellin-ABL

Punchaw-lla.
day-just

Rupay ka-yka-pti-n maletin-ni-:-ta hancha-rku-r
sun be-impf-adv-3 suitcase-Ø-1P-ACC carry-up-adv

pasaypa tamya-yka-pti-n shamu-yka-r
extremely rain-impfv-adv-3 come-impfv-adv

shamu-yka-r, riyu-man chaSKI-:.
come-impfv-adv river-GOAL arrive-1

Tsay-pita tsakapa pasa-SKI-mu-:.
that-ABL dark-GEN pass-perf-to:here-1

Mantsa mantsa aywa-kU-mu-:-lla.
fearing fearing go-refl-to:here-1-just

Tari-SKI-mu-: kaarru-ta Allpas ni-ya-nqa-n-chaw
find-perf-afar-1 vehicle-ACC Allpas say-pl-nml-3-LOC

Huari-pa chaSKI-mu-r-ni-n-qa.
Huari-GOAL arrive-to:here-adv-Ø-3-TOP

Tapu-kU-SKI-: Ima-paq-taq
ask-medrefl-perf-1 what-PUR-quest

qaya-tsi-yaa-ma-rqa-yki?
call-caus-pl-/1-past-2

Tsay willa-SKI-ma-n Kechwa-ta yachakU-na-yki-paq
that tell-perf-/1-3 Quechua-ACC learn-nml-2-PUR

ni-r-ni-n.
say-adv-Ø-3

'They called me by radio to this town of Huari. Then I left from Llamellin to Punchaw. While it was daylight, carrying my suitcase, although it was really raining, coming, coming, I arrived at the river. Then by night, fearfully, fearfully I came on. I found a ride at (a place called) Allpas. When I arrive in Huari, I asked: "Why did you all call me?" Then they tell me: "It's for you to learn Quechua!" saying.

-SkI also marks temporal sequence in the course of normal conversation aside from narrative or anecdotal accounts: In (36), the speaker is commenting on the behavior of trout in the local river:

(36) Lancha aywa-mu-pti-n, truucha rika-SKI-r,
launch go-to:here-adv-3 trout see-perf-adv

qeshpi-SKI-ya-n.
escape-perf-pl-3

'When the launch comes, the trout having seen it, escape.'

-SkI cannot be properly understood without considering its interrelatedness with the context. The contexts investigated serve to confirm the use of -skI as an indicator of perfective aspect.

9. Is there only one -skI?

The data indicates that the basic meaning of -skI is that of perfective aspect and the examples supplied thus far illustrate this. Where a form is used very frequently, however, (and -skI is one of these forms), its meaning tends to become more diffuse as the form adapts to its various environments. This process of spreading, or broadening, of meaning is not peculiar to the Quechua of Conchucos, rather, it is the way all languages use finite means to express an infinite number of potential semantic domains. According to Zipf's principle of diversity of meanings (1949),there is a direct relationship between the number of different meanings of a word and its relative frequency of occurrence. The distinction by German linguists between Grundbedeutung (literally, "ground meaning") and Nebenbedeutung (secondary meaning) has its roots in this historical process of drift from the more concrete to the more abstract.[12]

Parker (1973) followed this line of reasoning in his analysis of the "modal" suffix -rkU according to basic and metaphorical uses. A similar approach to -skI seems advisable. To review in detail all of the shades of meaning which -skI might be used to express would be impossible, not only because of their great variety and number, but because of the tendency for shades of meaning to overlap. Moreover, such an approach would produce a list of uses without necessarily showing their relation, if any, to the notion of perfective aspect. My intention is to show, through a representative sampling of the data, some of the ways in which the perfective meaning can be expanded and adjusted creatively in the speech of Conchucos Quechua.

9.1. -SkI and surprise

SkI typically signals events of short duration. If such an event occurs very suddenly, it may contain an element of surprise for the affected participants, and -skI will not only indicate the rapidity with which the event occurs, but also that it is contrary to the expectations of those involved or affected:[13]

(37) Hapa-lla-:-kuna noqa-kuna yacha-kaaku-ya-shka-a.
alone-just-1P-pl I-pl know-complete-pl-perf-1

Ni-SKI-mu-pti-ki imay qaqlla-:-chaw laqya-q.
say-perf-to:here-adv-2 when face-1P-LOC slap-sub

'(You said to me) "We are doing fine on our own."
When you said that to me, it was as if you had suddenly
slapped me in the face.'

9.2. -SkI and increased intensity

As one of the indicators of High Transitivity, -skI may also convey the notion of increased urgency or intensity (Hopper and Thompson 1980):

(38) Tsay-mi tsay urku-n-chaw resa-yka-nqa-n-ta
that-AFF that forehead-3P-LOC pray-impfv-nml-3-ACC

aha-SKI-n.
get:mad-perf-3

'Then, when he was stoned on the forehead while
praying, he really got mad.'

(39) Palla-rkU-ya-pti-:-qa lansa-mu-ra-n oqa
pick:up-up-pl-adv-1-TOP vomit-to:here-past-3 oca

miku-nqa-n-ta mama-n qara-nqa-n-ta.
eat-nml-3-ACC mother-3P give-nml-3-ACC

Lansa-SKI-mu-r-raq, lansa-SKI-mu-r-raq.
vomit-perf-to:here-adv-LIM vomit-perf-to:here-adv-LIM

'When we picked him up he vomited the oca that his
mother had given him to eat. He vomited (with force).
He really vomited.'

Note also the repetition of LansaskImurraq in (39) for even greater intensity.

When questioned specifically, native speakers will assert that:

(40a) Miku-SKI-y 'Eat it (up)!'
eat-perf-IMP

means to eat faster than:

(40b) Miku-y 'Eat it!'
eat-IMP

Likewise,

(41a) Mushku-yka-n
smell-impfv-3

means simply 'It smells,' but:

(41b) Mushku-SKI-n-na
smell-perf-3-now

means that 'It *really* smells.'

9.3. *-SkI* and thoroughness

9.3.1. Thorough and complete. If a speaker wishes to point out that an activity was not only completed, but was done *thoroughly*, with nothing left undone, he may signal this by the use of *-skI*.

(42) Tsay-pita-na-m llapa-n-ta usha-SKI-r-ni-n-qa
that-ABL-now-AFF all-3-ACC finish-perf-adv-0-3-TOP

yapay ka-nqa-n yaku-man wiña-rpu-r-ni-n-qa
again be-nml-3 water-GOAL add-in-adv-0-3-TOP

maki-ntsik-wan kupan kupan
hand-12P-COM sprinkling sprikling

maylla-kacha-SKI-r-ni-n-qa
wash-diffuse-perf-adv-0-3-TOP

kostal-man wiña-rkU-r-ni-n
sack-GOAL add-up-adv-0-3

waraa-ni-n-paq-raq haqi-ykU-ntsik.
morrow-0-2-PUR-

'Then, when we have completely finished everything, again into the water we put it, rubbing it with our hands. Having thoroughly washed it, emptying it into the bag, we leave it until the morrow.'

(43) Taka-n-pis shuyshu-SKI-ntsik.
pat-3-too strain-perf-12

'Also patting it down, we strain it thoroughly.'

The notion of thoroughness can easily be traced to the idea of completion, in that a thorough job is not only one which has been completed, but one which has been "completely" completed.

9.3.2. Thorough but not completed. Some instances of *skI* indicate that an action is viewed as a complete, but not a *completed*, whole. The emphasis is on the *whole* of the action, not on its termination point. Consider the following:

(44) Kay-naw wahi-:-ta sharka-tsi-r-ni-n haqi-SKI-r
this-SIM house-1P-ACC stand-caus-adv-Ø-3 leave-perf-adv

aywa-kU-na-:-paq ni-r-ni-n-qa yarpa-chakU-SKI-r
to-refl-nml-PUR say-adv-Ø-3-TOP think-wi:care-perf-adv

kuti-kU-mu-:.
return-refl-to:here-1

'Like this I've built my house just to leave it
completely, saying to myself, completely lost in
thought, I returned.'

The first instance of *-skI* in (44), *haqiskir* 'having left completely,' focuses on the completion of the action, but the second instance, *yarpachakuskirnin* 'thinking completely carefully about it,' does not imply that the "thinking" has been completed. Quite the contrary: at the time he made the utterance, some time later, the speaker was still very concerned about his house, and the use of *-skI* cannot therefore indicate that this action was completed. If, however, the *completeness*, or thoroughness of this concern is taken into account, this use of *-skI* can be explained as pragmatic extension of the basic meaning.

The following example, taken from a narrative text, refers to the materialistic desires of speaker's wife. She is known in this tale as a nagging woman who demands what she wants until she gets it:

(45) Y tsay-kuna rasun-kaq-ta-qa marka-man kada
and that-pl true-def-ACC-TOP town-GOAL each

wana-SKI-r wana-SKI-r-qa
need-perf-adv need-perf-adv-TOP

aani-KU-SKI-yaa-mu-q:
agree-refl-perf-pl-to:here-narpst

"Noqa rantiku-ya-shayki..."
I buy-pl-1/2fut

'And he would agree with her every time they went to
town, for sure every time she needed (wanted) anything,
saying, "I'll buy it for you."'

The speaker could well have chosen to use *-skI* here in order to express the complete, all-consuming nagging of his wife in *wanaskir wanaskir*. The repetition of the verb for emphasis would contribute to the intensity in a similar way to (39). If this hypothesis is correct, then *-skI* can indeed be used to indicate the action of the verb as a whole, without necessarily focusing on its termination point. In the case of the latter example, however, an interpretation including focus on the termination would not be out of order, either. (The wife could have *stopped* nagging her husband.) In any event, the notion of perfectivity can reasonably be extended to encompass either interpretation.

9.4. -SkI diminutive

Since the perfective aspect focuses on the whole of an event as one entity, this may have the effect of condensing the event to one point in the time continuum. A metaphorical extension of this is a sense of smallness. Certain clauses indicate that -skI has an implied diminutive effect: It was explained to me by a native speaker that, whereas:

(46a) pishta-y
kill:off-inf

means to kill with a knife,

(46b) pishta-SKI-y
kill:off-perf-inf

means to kill with a knife and chop into little pieces.

These extended uses of -skI all share two characteristics: 1) they can all be traced back to the basic meaning of perfective in that they can be viewed as metaphorical applications of the aspectual sense, and 2) they can all be considered to convey modal qualities, desiderative or intentional attitudes on the part of the speaker.

The conclusion to be reached from the above is that -skI is not strictly isolatable as a grammatical marker of perfective aspect in Conchucos Quechua. Instead, -skI may be considered as a linguistic unit potentially capable of bearing subjective information of a modal nature (a "superstratum" to the more concrete aspectual meaning). This modal nature does not conflict with the aspectual nature of the suffix, but it does indicate that, whereas aspect and tense are distinguishable from one another, at least to some degree in Quechua, aspect and modality are not.

The lack of clear categorial separation between aspect and modality helps to explain some of the other puzzling instances of -skI, such as its use with the future, where the attitude of the speaker, (his certainty that an event is going to take place), is the determining factor in specifying the perfectivity of the event:

(47) Llapan ayllu-wan-pis tsay waktsa marka-chaw
all family-COM-to that poor town-LOC

llakina-r-pis ama aywaku-y-tsu imay-pis
grieve-adv-too NEG go-IMP-NEG when-too

shamu-skI-shaq-mi panta-ykU-tsi-r-ni-ki.
come-perf-1fut-AFF miss-dir-caus-adv-Ø-2

> 'With the whole family in that humble town grieving, too, "Don't go" (saying), (I answer): whenever I do come back for sure, (until then) I will be missing you.'

The certainty is further indicated by the use of the affirmative evidential/validational suffix -mi. The salient notion of modality, which coordinates with the notion of perfective aspect, is that of certainty on the part of the speaker. In many instances, I would predict, speaker certainty about an event is the determining factor in the choice of the perfective aspect. In any event, extended, or metaphorical uses of -skI do not contradict the basic definition of perfective aspect. In that they can all be explained in the light of the notion of perfectivity, they further substantiate the perfective interpretation. Furthermore, proceeding from a basic to an extended definition determined in large part by the pragmatics of the communication situation is the only way to obtain a coherent conception of the role which -skI, or any other suffix, for that matter, plays in Quechua.

10. -SkI and lexical aspect

We have seen that the intersection between aspect and modality in Quechua is relevant to the interpretation of -skI. Another factor influencing the expression of perfective aspect in Conchucos Quechua is the intersection between aspect and the semantic type of the verb. Lyons (1977) states:

> Some languages do have a rich set of distinct aspects. It is not uncommon, however, for there to be no more than two or three formally distinct aspects, the distribution of which is rather wider than the terms that are employed to label them would tend to suggest. It may then happen, and frequently does, that one and the same aspect will be interpreted differently according to the character of the verb.

This influence of the "character of the verb" would explain, for example, why certain instances of -skI indicate rapid inception and completion of an event, as in the examples cited in 6.5, while other instances indicate completion only, an extreme example of which is the following:

(48) usha-SKI-n-na 'It's already finished'
finish-perf-3-now

Lexical aspect may also explain why -SkI may be used to indicate successful completion or achievement of an activity, not merely that it has reached its endpoint. The distinction here is sometimes difficult to explain from the use of -skI alone. Note, however, in the following pair of sentences, how the first indicates simple completion of the activity of talking alone, while the second indicates successful achievement of the activity of throwing something away:

(49) Nikaptin-qa qechu-SKI-ya-pti-n-qa llapa-n
then-TOP remove-perf-pl-adv-3-TOP all-3

marka-mahi-n-kuna wilia-nakU-SKI-r-qa aywa-naq.
town-accom-3-pl tell-recip-perf-adv-TOP go-narpst

'Then after they had taken it away, all of the
townspeople, having talked among themselves, left.'

(50) Shikra-man wiña-rkU-r-qa mama-n-kuna
bag-GOAL add-up-adv-TOP mother-3P-pl

hita-SKI-yaa-naq qaqa-ta.
throw-perf-pl-narpst rock-ACC

'After she had put them in the bag, their mother
threw them away by a large rock.'

The *-skI* in *qechuskiyaptinqa* 'having removed it' and the *-skI* in *hitaskiyaanaq* 'threw them away,' indicate successfully completed completed action. The *-skI* in *willanakuskirqa*, 'having talked among themselves,' says nothing about successful achievement of the talkers' goals. If we consider that the lexical aspect of 'talk among themselves' does not indicate transfer of action to nearly the degree that 'remove it' or 'throw away' do, then the difference between completion and successful achivement can be explained, not on the basis of *skI*, but on the basis of the verb to which it is affixed.

In their discussion of Transitivity, Hopper and Thompson distinguish between 'Aktionsart', or lexical aspect, and Aspect proper, in the sense of telicity/perfectivity (1980:271). Accordingly, a stative verb, which by nature would not be expected to depict action, would tend towards imperfectivity rather than perfectivity by nature. This is, in general, true for Conchucos Quechua. Consider the following pair of clauses:

(51a) Yamay-lla-m ka-ykaa-: 'I am fine.'
well-just-AFF be-impfv-1

(51b) *Yamay-lla-m ka-SKI-:

The verb *kay* 'to be,' typically appears with the imperfective affix *-ykaa*, and not with the perfective affix *-skI*. However, there are certain exceptions to this, notably the following:

(52) Aywa-r-ni-n ishkan ka-skI-shun wahi-ntsik-chaw
go-adv-0-3 two be-perf-12fut house-12P-LOC

If we go, then we will be two in our house.'

(53) Examen ka-SKI-pti-n-tsuraq shamu-nqa.
exam be-perf-adv-3-?? come-3fut

'When the exam has been (finished), he will come.'

These can only be understood correctly if we interpret *-skI* as indicating the *completion* of a change of state, as in (52), or the *conclusion*, as in (53), of an ongoing state. There is nothing in the lexical aspect of the verb 'to be' itself which would indicate this perfectivization of the situation. By process of elimination, we conclude that *skI* alone indicates the perfectivity in these instances. The appearance of *skI* in a most unlikely environment without the correlation of other perfectivizing factors clearly substantiates the hypothesis that it communicates perfectivity.

11. Further comments and conclusions

One way to encode perfective aspect in Conchucos Quechua is by affixing *-skI* to the verb. Isolated sentences and clauses within larger discourses substantiate this claim. Language data also indicate that *-skI*'s function is not limited to marking perfectivity alone, but that *-skI* may also convey certain modal qualities, such as certainty on the part of the speaker that an event will be brought to a successful conclusion. Neither *-skI* nor any other of the derivational suffixes in Quechua is obligatory: a speaker may choose *not* to employ *-skI* in a given environment. If *-skI* occurs, however, its meaning in the context can be traced back to the essential notion of perfective aspect.

If *-skI* is not chosen by a particular speaker in an instance requiring the indication of perfective aspect, the perfectivity will be indicated by some other element in the grammar, most likely by another derivational suffix. In other words, *-skI* can be defined by perfective aspect, but perfective aspect cannot be defined by *skI*. The suffix *-rkU*, for example, may be also used to indicate perfectivity, so that statements such as *mikurkun* 'he eats it (all) up' and *mikuskin* 'he eats it completely' are quite close in meaning.[14]

This study has explored the expression of perfective aspect in the verb of Conchucos Quechua by seeking to categorize a single suffix; having identified this suffix with perfective aspect does not imply that perfectivity in Conchucos Quechua can *only* be indicated by *-skI*. Quite the contrary, I suspect otherwise. Considering perfectivity to be a continuum in the sense that Hopper and Thompson interpret Transitivity, *-skI* could be said to be *more* perfective than *-rkU* in Conchucos. I would suspect that in dialects of Quechua where *-skI* does not appear, *-rkU* would rate higher on the perfectivity continuum.[15] Quechua language consultants often have difficulty distinguishing differences in meaning between verb forms such as these, and will sometimes mention only that *-skI* conveys a slightly greater degree of urgency. The distinction in this case would be more of modality than of aspect.

The apparently modal uses of *-skI* are disturbing in the analysis because they interfere with the tidiness of the categorization of perfectivity. On the other hand, if the aspect definition is taken as basic, the modal qualities can be recognized for what they are: subjective attitudinal influences closely allied to speaker style and the specific communication situation.

The interrelationship between mood and aspect in *-skI* is symptomatic of the behavior of other derivational suffixes as they pattern together on the verb in the various Quechua dialects. The case of *-rkU* and *-skI* is but one example of overlapping functions. Furthermore, each dialect is unique and, at this point, there is no reason to suspect that the patterning of the derivational suffixes will be the same in any two dialects. Not even *-skI* in one dialect can necessarily be equated with *-skI* in another dialect without careful investigation. Knowing that *-skI* indicates perfectivity in Conchucos is no guarantee, for example, that it does likewise in Western Huanuco.

Since none of the derivational suffixes is obligatory in the way that tense and person markers in Quechua are, their interrelationship with tense needs to be investigated. To what extent *can* aspect, specifically, perfective aspect, be expressed through tense markers, if at all? Study of the interrelationship between tense and aspect could shed light on the notion of aspect as distinct from tense, not only in Quechua, but in language in general. Aspect has frequently been investigated in languages which do not have separate grammatical markers for tense and aspect, and this may be a source for ambiguity in definitions. Traditionally, for example, perfective aspect has been equated with perfect tense. The study of aspect, not only in Quechua, but in typologically similar languages, should contribute to a greater understanding of what appears to be a universal category.

Further complications arise not only from the derivational suffixes themselves, but from the verbs to which they are affixed. To what extent, for example, is *-skI*'s perfectivity contingent upon the nature of the verb stem to which it is affixed? *-SkI*'s frequent attraction to verbs such as *ushay*'to finish' is certainly not coincidental.[16]

Finally, a key to unscrambling the linguistic puzzle of the present is the linguistic situation of the past. Where did *-skI* come from? From a main verb? If so, what did *-skI* mean? Extensive diachronic study in the Quechua language family might shed light on the matter.

Footnotes

1. This paper was produced under the auspices of the Summer Institute of Linguistics and the Ohio State University, and is based on field work carried out in Eastern Ancash, Peru, Province of Huari, District of San Luis, in 1981 and 1982. The majority of the texts I owe to Mariano Jaramillo Paulino, native of Huanchacbamba, Pomabamba, but residing in San Luis at the time. Other texts upon which the research was based are from Chacas, San Luis, and surrounding towns and villages.

I wish to thank especially Carl Harrison, Brian Joseph, and Peter Landerman for their insightful comments and suggestions, and Tom and Doris Payne for time and help with their computer.

Conchucos Quechua has the following phonemes: Consonants: p, t, ts, ch, k, q (post-velar obstruent), s, sh, h, m, n, ñ, l (ll), r, w, y. Vowels: i, a, u, and their corresponding lengthened counterparts. Under certain conditions, when the high vowels i and u are potentially subject to a morphophonemic lowering process, they are symbolized as I and U.

The following symbols and abbreviations have been used:

:	length
∅	null (nothing)
1	first person singular
12	first person plural inclusive
3	third person
/1	first person object
1/2	first person subject, second person object
??	question marker
ABL	ablative
ACC	accusative
accom	accompaniment
adv	adverbial(izer)
bec	become
ben	benefactive
caus	cause or causative
COM	comitative
cond	conditional
def	definite
desid	desiderative
DIR	direct (information) or direction
fut	future
GEN	genitive
GOAL	goal
IMP	imperative
impfv	imperfective
incep	inceptive
LIM	limitative
LOC	locative
narpst	narrative past
nml	nominalizer
part	participle

pass	passive
past	simple past
perf	perfective
pl	plural
pnct	punctual
PUR	purposive
recip	reciprocal
recpst	recent past
refl	reflexive
REP	reportative
SIM	similarity
stat	state
sub	substantivizing subordinator
TOP	topic
YN?	yes/no question marker
SS	same subject
DS	different subject

2. Bruce and Jan Benson, for example, report -skI in the neighboring Marias dialect of Western Huanuco.

3. Peter Landerman, personal communication.

4. Thus, in certain environments: -skI → ska, as in:

aywaskamuy	'to leave completely'
maqaskamasha	'he has hit me'

5. For example: rika-tsi-pa -rka-tsi-r-ni-n-qa
see-caus-ben-up-caus-adv-Ø-3-TOP

'having caused it to be shown'

6. Snow's report is based on the Quechua of the province of Antonio Raimondi in Eastern Ancash, which may be somewhat distinct from the Quechua of the districts of San Luis and Pomambamba, the focus of this paper.

7. According to Longacre (1976:238), aspect is one of those "troublesome and hard to classify features of linguistic structure." It is defined as "features which have to do with the quality of the action indicated in the verb." In Longacre's framework, aspect may be progressive, punctiliar, completive, repetitive, or gnomic, but need not necessarily be restricted to these. Aspect markers, according to Dowty (1979:62) "serve to distinguish such things as whether the beginning, middle or end of an event is being referred to, whether the event is a single one or a repeated one, and whether the event is completed or possibly left incomplete." According to Steele (1980), aspect ascribes a "temporal contour" to tense. "It includes (at least) such notions

as perfective or imperfective and progressive, but is not restricted to these." (1980:21) Culioli (1971) speaks of "open aspect," which presents a process as it takes place, and "closed aspect," which indicates that the end of a process has been reached.

8. Perfective aspect is not to be confused with perfect tense, which is a past situation with present relevance.

9. Some further comments about perfectivity and iconicity are in order here. According to the hypothesis that there is an isomorphic relation between sound and meaning, an "iconic" tendency in language, (see also Haiman 1980:516) the perfective aspect in Quechua should physically reflect the reality of the concept of perfectivity, of viewing the event as a single whole, is some readily discernable way.

-SkI is phonetically tight, brief, and tense; correspondingly, perfective aspect generally indicates telicity, punctuality, and, at times, intensity. The rapidity with which -skI is usually pronounced is perhaps a reason why it is used when the speaker desires to convey a sense of urgency. In the following instance, the speaker explained that he probably wouldn't have used skI in this command if he hadn't wanted his brother to really hurry:

(i) Shukuskiy ras aywaskinaykipaq.

'Get your hat on fast to go.'

If the briefness and tenseness of skI is an iconic reflection of its perfective meaning, a parallel iconicity is to be expected with the imperfective suffix ykaa. This appears to be the case: -ykaa begins with a semi-vowel rather than a sibilant, and ends with a long, open, lax vowel rather than with a short, high, tense vowel.

Jakobson (1971:202) had the following to say regarding aspect in Russian: "Any verb of a semantically nonrestrictive or expansive (ie. imperfective, indeterminate, or iterative) aspect has a longer stem suffix than the correlative verb of the opposite aspect." Jakobson provides the following illustration of such an iconic representation of the perfective- imperfective opposition in Russian:

(iia) zamorozi 'to complete freezing'

(iib) zamorazivaj 'to freeze' (with or without completion)

Note that, in Conchucos Quechua, the vowel in the suffix -skI which marks perfective aspect, according to the analysis presented here, is also i; and, in parallel fashion, the vowel in the imperfective -*ykaa* is a long *a*, comparable to that in the Russian -*ivaj*.

10. The basic corpus of data consisted of all of the sentences with *skI* from approximately seventy-five pages of transcribed spoken texts recorded in a Quechua-speaking community in Peru.

11. For more about this see David Weber's 1983 UCLA dissertation on Huallaga Quechua, a dialect where -*skI* does not appear and other affixes assume the perfectivizing function.

12. Bloomfield, for example, remarked that "refined and abstract meanings largely grow out of concrete meanings" (1933:429).

13. Snow (1972), as previously noted, reports similarly for Antonio Raimondi.

14. Conchucos Quechua speakers also maintain that, if you say:

(iiia) upuku*skiy*. 'Drink it up.'

you mean: "Be *sure* to drink it up." or, "You had *better* drink it up." If, on the other hand, you say:

(iiib) upuku*rkuy*. 'Drink it up.'

you convey the impression that it's not all that important if you drink it up, although you are encouraged to do so. (Note, with regard to iconicity, that the suffix *rkU* probably takes a bit longer to pronounce.)

15. A similar observation could be made regarding the punctiliar affix -*rI*, which apparently takes the place of -*skI* in Huaraz.

16. For example:

(iv) usha*skIn* 'He/she finished it (completely).'

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The Syntax-Phonology Boundary and Current Syntactic Theories

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Two important modularity principles are generally regarded as implicit in standard TG theory:

(I) The phonological component has no access to syntactic information except what is in the surface structure.

(II) The syntactic component has no access to phonological information.

(I) is the Principle of Superficial Constraints in Phonology (PSCP) discussed by Zwicky (1970). It is implied by the standard view that the phonological component is an interpretive one, performing a transduction from the output of the syntactic component to the level of systematic phonetics. If surface structure is the input representational level for phonology, more abstract levels of the derivation can have no direct influence on phonetic interpretation.

(II) is the Principle of Phonology-Free Syntax (PPFS) explored by Zwicky (1969).

Numerous linguists have discussed phenomena that appear to them to call for either the PSCP or the PPFS to be weakened. Typically, it is argued that global constraints have to be permitted in grammatical descriptions: inaccessible syntactic information has to be made available to the phonological rules, or vice versa. Those who regard global constraints as irredeemably undesirable have attempted reanalyses of various sorts, attempting to utilize already available machinery of the standard theory to handle the facts without breaching the modularity assumpion that keeps the syntactic and phonological components separate.

The past few years have seen the emergence of theories that depart from the standard theory quite radically, in ways that have hitherto unexamined implications for modularity constraints. The most radical are the "monostratal" theories, which posit no syntactic level other than what standard theory would call surface structure. Generalized Phrase Structure (GPSG) is conceptually the purest of these proposals, in that it assigns the whole burden of syntax to a mechanism already admitted in standard theory: the phrase structure (PS) rules. Unlike the standard theory, such a theory necessarily entails both the PSCP and the PPFS in their strongest forms without any fine tuning. The PSCP follows since the surface syntax is the only syntax there is. The PPFS follows because the categorial component of the base operates in terms of categories and formatives and not in terms of any phonological primitives.

In this paper we explore the question of whether a theory that directly entails the PSCP and the PPFS in unweakened forms should be regarded as favored for that reason, or whether, in the light of the rather extensive literature calling for relaxation of the PSCP or the PPFS or both, a theory like GPSG that cannot admit such weakening should be regarded as *ipso facto* suspect. This topic is, of course, a massive one. We have been studying the corpus of alleged violations of the PSCP and the PPFS for some time, and the number of relevant descriptive problems we have encountered in different languages runs into the hundreds. In this paper we shall call upon just two well known and representative case studies to illustrate the view we propose to take.

1. *The Principle of Superficial Constraints in Phonology*

Perhaps the best known example of a problem area in English that suggests that the PSCP is too strong concerns the phonological reduction of English auxiliaries when unstressed. This was the main topic of Zwicky (1970). It was recalled to the attention of linguists by the remarks of King (1970), rediscovering somewhat more general observations by Sweet (1908), and was set in the context of a theoretical debate by Lakoff (1970). It is of interest, however, that in the light of the wide acceptance of phonologically null surface syntactic constituents with no phonetically realized effects by virtually all current schools of thought, the original arguments have lost most of their force.

The phenomena, as is well known, appeared to involve phonological perturbations--failure of certain unstressed items to assume a normally sanctioned reduced pronunciation--that were due to the effects of transformations that had moved or deleted material adjacent to the items in question. A typical contrasting pair of examples is provided by *I wonder whether the party's at Robin's tonight*, with contractible *is*, and **I wonder where the party's tonight*, with uncontractible *is*. But the advent of traces, i.e. phonetically null elements appearing in surface locations where transformations had introduced a 'gap' at an earlier stage, has definitely altered the situation.

The remarks of Chomsky (1975, 117) concerning the claimed invalidity of 'excessive power' arguments against his variety of 'trace theory' are misleading in this conection. It is true that one cannot say that a theory in which no movement transformations leave traces in any grammar is inherently more or less powerful than a theory in which all movement transformations leave traces in all grammars, since neither allows parochial variation in the matter of whether traces are left by movements. But given that traces are left by some rules, there is a real difference in what phenomena can be readily described by rules that mention traces in their structural descriptions.

The generalization that an auxiliary followed at one stage by a constituent which is later moved or deleted cannot undergo a certain phonological rule *P* (which is reminiscent of what seems to be going on in English contraction, though it is not a fully accurate description) seemed essentially uncapturable in the unvarnished standard theory. But once the relevant locations in the surface tree are identifiable by a marker of any sort that consists of syntactically or phonologically mentionable material, the statement of such rules is straightforward, even if the resulting statements are not notably explanatory. And the way is open for a somewhat more explanatory formulation to be developed along similar lines (see Selkirk 1972). Notice that it is not the case that Chomsky has in practice eschewed language-particular rules that mention traces. One may be seen in Chomsky and Lasnik (1977, 478, example 154), for example. Nor have others overlooked this possibiity; see e.g. Sag (1978).

The other celebrated problem in English for the PSCP is the formulation of the syntactic environment for the English Nuclear Stress Rule (NSR). Bresnan's (1971) analysis crucially involves a rule of stress assignment applying to representations that are (in some cases) present only during the syntactic cycle on a given clause, so it can hardly be claimed to be compatible with the PSCP. However, it seems to us that, for a number of reasons, B's account must be rejected anyway.

To begin with, we think that there is a fundamental confusion inherent in the remarks about 'normal stress' that permeate Bresnan's paper. Recall that the NSR places a heavy accent on the final primary word-stress in the sentence. Bresnan claims:

> This is, in general, the 'normal' intonation for an English sentence. There are, however, well-known classes of exceptions to this pattern. Final anaphoric pronouns do not normally receive primary stress:
>
> (2) Helen $\overset{1}{\text{teaches}}$ it.
>
> *Helen teaches $\overset{1}{\text{it}}$.
>
> ('Normally' means 'excluding emphatic or contrastive stress'.) Nor do final indefinite pronouns normally receive primary stress:
>
> (3) The boy $\overset{1}{\text{bought}}$ some.
>
> *The boy bought $\overset{1}{\text{some}}$.
>
> Other anaphoric items, even when grammatically definite, receive no 1-stress:
>
> (4) John knows a woman who excels at karate,
> and he $\overset{1}{\text{avoids}}$ the woman.
>
> In what follows I will assume that, by some means or other, anaphoric and indefinite elements are not assigned primary stress, and generally I will ignore the stressing of items which are not relevant to the point at issue.

The confusion we are pointing to is to think that there could be 'some means' by which anaphoric constituents could be identified and exempted from the operation of a stress rule. Lakoff (1972, 291) is quite right to point out that 'Anaphora...is not a lexical property. It is a syntactic-semantic phenomenon which can, and must, be specified independently of lexical idiosyncracies.' To see the difficulty, consider (1).

(1) Lord Threshingham has been singularly careless in his liaisons with servant-girls. What can we do about the bastard?

There is no way a stress rule could determine on the basis of the syntactic or semantic structure of the second sentence in (1) whether *the bastard* was anaphoric. We obtain a well-formed sentence whether we place heavy accent on *bastard* or on *do* (to mention only two possibilities). If *bastard* is accented heavily, the utterance will be interpreted by the hearer to suggest that *the bastard* refers to some entity not referred to in the earlier part of the sentence: an illegitimate son (presumably of Lord Threshingham's), to be precise. Or it can convey extraordinary exasperation with Lord Threshingham, in which case *the bastard* refers to Lord Threshingham. If *bastard* is not heavily accented, *the bastard* would be interpreted by the hearer to be anaphoric, i.e. to refer to an entity already introduced into the discourse. This could be an illegitimate son if one had been mentioned earlier in the discourse, or it could be Lord Threshingham, or anyone else recently mentioned and still salient. There is no finite limit on what we might need to know about the discourse of which (1) is assumed to be part in order for us to be able to predict whether the phrase *the bastard* should be read with low stress or not. (Such decisions are difficult enough that experienced actors often fail to see enough of the structure in their script, and read a line with a stress pattern that cannot possibly be correct given the full context.)

Bresnan's approach is essentially to identify a kernel class of sentences in which the stress is 'normal' and for which the rules of grammar to determine it operate without special circumstances obscuring them. We regard this approach as completely mistaken in principle.

But there are empirical difficulties with the rule system she advocates as well. Consider the following examples.

(2) a. I've already GIVen it to him.
b. #I've already given it TO him.

(3) a. You've already given it to WHOM?
b. ##You've already given it TO whom?
c. ##You've already GIVen to whom?

(4) a. Who have you GIVen it to?
b. Who have you given it TO?
c. Who have you GIVen to?

The capitalization indicates stress. Example (2a) is quite natural, while (2b), with a stressed preposition, is unnatural. In (3a) the only natural stress is on the wh-pronoun *whom*, the other possibilities in (3b) and (3c) being extremely unnatural. From a source like the natural (2a), her analysis predicts that under wh-movement we would get the stress pattern seen in (4a). This is well and good. But it also predicts that the pattern in (4b) will have the same unacceptability as the completely unnatural (3b), and that the pattern in (4c) will have the same unacceptability as the completely unnatural (3c), and both predictions are quite incorrect. The hypothesis that stress patterns are preserved through transformational derivations is not supported by such cases.

Let us now turn to the cases on which Bresnan originally based her hypothesis about the ordering of the NSR, namely the cases discussed by Newman (1946), and analogous examples. The typical contrast is one like (5).

(5) a. George has plans to LEAVE.
    b. George has PLANS to leave.

Newman noted that where the stress is as indicated, the verb *leave* is read as intransitive (i.e. as 'depart') in (5a), but as transitive (i.e. as 'deposit, drop off, abandon') in (5b). We shall refer to this as the *Newman effect*. Bresnan's explanation for it is, in essence, that stress is placed on the final constituent of the VP in both (5a) and (5b), but in (5b) the stressed constituent is a wh-phrase (the object of *leave*) that is moved and then deleted by the rule that derives infinitival relative clauses.

An important example of a generalization missed by Bresnan (but pointed out to us by Ivan Sag) is that the Newman effect operates in (7) as well as (6):

(6) Stacy has a proPOSal to incorporate.
(7) Stacy has a proPOSal to be incorporated.

Both imply that a proposal will be incorporated into something. But if *inCORporate*(*d*) bears the sentence accent, the meaning changes (Stacy proposes to become a corporation):

(8) Stacy has a proposal to inCORporate.
(9) Stacy has a proposal to be iNCORporated.

For (6), Bresnan's theory postulates a postverbal NP in cyclic structure that absorbs nuclear stress. But the passive analog (7) is treated in a completely different way (see Bresnan 1972:328-9, essentially acceding to the point made by Berman and Szamosi 1972:307). Hence Bresnan's account does not seem optimal (a welcome conclusion for Bresnan, who now advocates a theory with no syntactic cycle; cf. Bresnan 1982). It is encouraging that accounts are now being advanced--see in particular Culicover and Rochemont (1983)--in which sentence stress is not predicted directly from syntactic structure.

2. The Principle of Phonology-Free Syntax

Whether the PPFS is implicit in standard TG is a matter that depends on the rather confusing question of how exactly lexical insertion is supposed to operate in TG. It is probably assumed by many linguists that the PPFS is entailed by the definition of transformational rules, since transformations are assumed to be able to refer only to categories (like NP or V) and formatives (like *you* in Imperative Subject Deletion or *there* in *There*-Insertion), but not to details of the internal phonological composition of formatives.

The matter is obscured by an error in Chomsky (1965). The lexical insertion algorithm Chomsky gives (1965, 84) reads as follows:

> If *Q* is a complex symbol of a preterminal string and (*D*, *C*) is a lexical entry, where *C* is not distinct from *Q*, then *Q* can be replaced by *D*.

This formulation *substitutes* phonological matrices for complexes of syntactic and semantic features at deep structure, with the result that transformations have access to the phonological shape of formatives but not access to syntactic features or even categories (and the semantic component has no access to semantic properties of lexical items). This is apparently a mistake, as was pointed out by both Brekle and Luelsdorff (1975, 376) and Hudson (1976, 90). As Hudson observes, we can safely assume that the way the standard theory is supposed to work is that the phonological shape *D* is appended to the syntactic/semantic feature complex *C*, and that although phonological shapes of formatives are henceforth present in syntactic representations, they are rendered inaccessible to the operations of transformations, which are permitted to analyze only the syntactic information contained in the complex symbols that label the nodes.

Hudson (1976) argues quite sensibly that a modification should be introduced that has only syntactic and semantic information inserted at deep structure, phonological and morphologcal details being added at surface structure. This might seem to be sailing dangerously close to the generative semantic wind, in that it makes lexical decomposition in the syntax much easier to handle. But later we find Chomsky and Lasnik (1977) proposing 'lexical insertion at surface structure' anyway, so Hudson's idea cannot have been totally heretical even from Chomsky's standpoint. Provided something like Hudson's revision is adopted, or that transformational rules are simply blinkered by stipulation to make phonological representations invisible to them, the PPFS will be entailed by standard TG.

While it would be possible, through only slight tampering with standard TG, to permit transformations to inspect details of phonological representations attached to nodes (and thus to formulate, e.g., a rule to front phrases that begin with a bilabial stop), the definition of PS rules excludes such a possibility. A PS rule of the form A --> W, where A is a syntactic category label and W is a string of terminals and/or nonterminals, can pick out an individual formative that happens to begin with a bilabial stop and stipulate that it be the first element of W, but it cannot quantify over the entire stock of such formatives. If a terminal is mentioned first in W, only that item will be picked up, while if a nonterminal is mentioned, all members of that category will be picked up regardless of their phonological composition. Even a list of rules that included one for each lexical item beginning with a bilabial stop would not achieve the effect of fronting all [p]-initial and [b]-initial constituents once we consider the fact that the lexicon is in effect open (e.g. there is no limit to the number of possible proper names beginning with [b]). The list approach would not embody the claim that all newly coined names beginning with [b] would also determine fronting. And the various schemata and other devices for capturing syntactic generalizations in GPSG merely have the effect of stating sets of ordinary PS rules more compactly. They do not alter the character of the operations that can be performed by PS rules.

However, there is a possibility inherent in TG that is inherent in exactly the same way in GPSG. Given the availability of syntactic features and the possibility of lexical redundancy rules (LRR's) being conditioned by phonological properties, there would be legal analyses capable of obtaining the result that all phrases beginning with bilabial stops appear together (as a group) at the beginning of their clauses. A simple statement of such an analysis can be devised using the ID/LP format of Gazdar and Pullum (1981).

We first state an LRR to assign a feature [+F] to all and only those lexical items that begin with a bilabial stop. It is not too hard to develop an explicit statement of the LRR. Let FORM be a function of one argument that applies to a lexical item and returns its phonological representation (a string of feature matrices). Let NONDISTINCT be a function of two arguments (both quoted strings of feature matrices) that returns TRUE if its first argument is nondistinct from its second argument in the usual sense: two feature matrices (not necessarily fully specified) are nondistinct if neither has a value V_1 for a feature where the other has a different value V_2 for that feature. Let VALUE be a function of two arguments returning the value that its first argument (an item) has for its second argument (a feature). The LRR could then be stated as follows:

```
(NONDISTINCT("[+anterior, -coronal, -continuant][...]*", FORM(@)) =
  TRUE)  <-->  (VALUE(@, F) = +)
```

Second, we state a feature-percolation convention that requires the feature [+F] to be present on any node that has a [+F] daughter constituent. The feature [+F] will then percolate from a lexical item with this feature all the way up to the root node. Third, we assume an LP statement in the grammar that says "@[+F] < $[-F]", where @ and $ are universally quantified variables ranging over the nonterminal vocabulary. Regardless of what ID rules we have for stating what constituents can appear in S, the only linearizations that the LP statement just mentioned will admit are those that put [+F] constituents leftmost.

We are therefore able to construct, even in phrase structure terms, an analysis that positions a constituent syntactically according to whether its initial lexical item begins with a bilabial stop or not--a paradigm case of a PPFS violation. And clearly we could construct such an analysis within TG as well, even within a version of TG that was set up to deny transformations access to phonological form; an obligatory fronting transformation would be stated in terms sensitive to the syntactic feature [+F]. Two questions arise: whether we should forbid such analyses, and whether we can.

We take the position that an analysis along the lines just sketched should indeed be excluded. We shall argue that linguistic theory should not permit any LRR to predict a syntactic property on the basis of a phonological one. However, this raises the second question: Is such a restriction too strong? Are there any sets of facts that clearly and uncontroversially call for analysis in terms of an LRR of the type we plan to prohibit?

Although many cases from different languages could be discussed in this connection, we shall again take just a familiar case from English: inflectional versus periphrastic degree marking in adjectives. There is a traditionally recognized and apparently phonology-related generalization distinguishing the adjectives like *nice*, which accept the *-er* and *-est* suffixes (*nicer*, *nicest*), and those like *gorgeous*, which do not (**gorgeouser*, **gorgeousest*) and therefore have to take the periphrastic comparative and superlative markers (*more gorgeous*, *most gorgeous*). To put it very roughly, the adjectives in the former class are shorter and those in the latter class are longer, and length of words is assessed in terms of phonological rather than syntactic units. Here is the account of the generalization offered in slightly more precise terms by Jespersen (1933, 222).

> Comparatives in *-er* and superlatives in *-est* are formed freely from monosyllables and from words of two syllables ending in a vocalic sound (e.g. *pretty, narrow, clever*) or in a syllabic *l*..., or else having the stress on the last syllable (*polite*, *severe*)...But with all longer words, especially if ending in a hard group of consonants, these endings are avoided, and comparison is effected by means of preposed *more* and *most*...

Not only does this (slightly abridged) summary make it look as if phonological considerations are playing a role in the syntax of comparatives and superlatives, the facts have actually been cited as evidence that a theory that allows for some flexibility in the matter of syntax-phonology relations is *ipso facto* favored over more stringent alternative theories. Huddleston (1973, 353) criticizes stratificational grammar for being too restrictive in this domain:

> ...in English we shall need to distinguish in the lexotactics and/or morphotactics between adjectives like *tall* which take the comparative suffix *-er*, and those like *beautiful* which take *more*: within the SG framework the classes are entirely arbitrary at these grammatical strata, for the theory does not allow any references to phonological syllable structure at this point. Examples of this sort seem to me to present quite compelling evidence against the stratificational hypothesis: the theory is based on an assumption of a much greater independence of semantic, grammatical (or syntactic) and phonological phenomena than can be empirically justified.

We disagree with Huddleston. We believe that the rigidity of stratificational grammar on this point ought to count in its favor, and likewise for other frameworks that do not countenance the statement of correlations in the phonology-to-syntax direction. We will argue that the traditional phonological generalization does not hold up under scrutiny. There will be some variation between individual speakers in the data we cite, but we believe it is straightforward to show for any idiolect of Enlgish that purely phonological conditioning is not operative.

First, it is not true that monosyllabicity is a sufficient condition for inflectability in adjectives. We find the following examples all ungrammatical:

(10) a. God is coming; and She's { *never been pisseder
*the pissedest she's ever been
never been more pissed
the most pissed she's ever been }

b. The experience { *seemed realer when I took the drug
*was the realest I'd ever had }.

c. The { *scaredest
*scareder } ones can stay behind.

d. Look for { *a mainer route than this one
*the mainest route you can find }.

e. She { *looks iller than he does
*is the illest of all of them }.

f. I wish I { *felt weller
*was the wellest man in the crew }.

g. Your solution is { *even wronger
*the wrongest }.

h. The laws of the land { *should be juster
*are the justest }.

Second, it is not of course true that monosyllabicity is a necessary condition for inflectability. We find hundreds of forms such as those in (11).

(11)

nasty	nastier	natiest
obscure	obscurer	obscurest
stupid	stupider	stupidest
noble	nobler	noblest
severe	severer	severest

Sweet (1891: 326-327) suggests a number of generalizations governing which adjectives inflect and which do not, but they are not watertight. The problem is that for each of the subclasses he refers to we can find both members that inflect and members that do not. Some examples follow.

(12) Words ending in $C_0V(\underline{r})$

Inflectable:	bitter	bitterer	bitterest
	tender	tenderer	tenderest
	slender	slenderer	slenderest

Uninflectable:	eager	*eagerer	*eagerest
	proper	*properer	*properest

(13) Words ending in $V{:}C_0^1$:

Inflectable:	obscure	obscurer	obscurest
	polite	politer	politest
Uninflectable:	afraid	*afraider	*afraidest
	unreal	*unrealer	*unrealest
	alone	*aloner	*alonest
	unkempt	*unkempter	*unkemptest

Even when we move to trisyllabic adjectives, we cannot say that inflection becomes impossible. Many trisyllabic adjectives with the negative prefix un- take adjectival inflection; but again, there are others that do not:

(14) Trisyllabic adjectives

Inflectable:	unlikely	unlikelier	unlikeliest
	unwieldy	unwieldier	unwieldiest
Uninflectable:	uncertain	*uncertainer	*uncertainest
	unlawful	*unlawfuller	*unlawfullest

Thus the division of adjectives into inflecting and periphrastic subcategories turns out to be a matter of arbitrary lexical conditioning. The tendency for one subcategory to contain shorter stems than the other is explicable historically and is not grammatically relevant.

We have found that this sort of situation is typical of the various putative phonologically constrained LRR's that have been suggested for English or other languages. We are therefore inclined to think that LLR's of the form "$\varphi \supset \psi$", where φ involves a phonological or phonetic predicate and ψ a syntactic one, should be disallowed in principle. This would mean that descriptions of languages with (for example) a productive preposing of phrases beginning with [p] or [b] would be completely excluded if grammars were phrase structure grammars. We think this is the right result.

3. Conclusion

Our conclusion from this brief review of two familiar descriptive problems in English is that a monostratal syntactic theory like GPSG might well be formalized in such a way that it entailed both the PSCP and PPFS in their strongest forms, and that on presently available evidence this must be regarded as a point in favor of such theories. It should go without saying, however, that there is a large amount of work to be done in developing adequate GPSG analyses of the kind of phenomena at the syntax-phonology interface that have been held to provide evidence for the necessity of weakening one or the other of these constraints. Our position is that there are prospects for success in this work, not that the work has already been done.

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"Reduced Words" in Highly Modular Theories:
Yiddish Anarthrous Locatives Reexamined

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1. An Embarrassment of Theoretical Riches

1.1. Reduced/Weak vs. Full/Strong

In most currently available theoretical frameworks there are several possible analyses for "reduced", or "weak", forms paired with "full", or "strong", forms. A reduced form might turn out to be any one of the following:

--an inflectional affix, only historically related to the full form. This is certainly the case for the English derivational suffix -*ly*, which has only a historical relationship to the full word *like*. A less obvious example is the English contracted negator *n't*, which Zwicky and Pullum (1983) argue is an inflectional suffix in modern English, though it is indubitably related historically to the full negator *not*.

--a clitic with a special distribution, distinct from that of the corresponding full form (a "special clitic", in the version of the terminology of Zwicky (1977) that I will use here). This is the case for a set of Serbo-Croatian weak forms including the dative personal pronouns *mu* (3 sg. masc./neut.) and *im* (3 pl.); the corresponding full forms are *njemu* and *njima*, respectively (Browne 1974, 38). Serbo-Croatian weak forms occur as clitics in "second position", which can be either after the first accented word in a clause or after the first accented constituent (Browne, 41). Full forms occur everywhere else (usually indicating emphasis or contrast)--including in isolation: *Njemu?* 'To him', *Njima?* "to them?'.

--a clitic that merely attaches to a word adjacent to the corresponding full form (a "simple clitic" in my current terminology). The English auxiliary clitics *'s*, *'d*, and so on are simple clitics, attached phonologically to the word preceding them and serving as reduced forms of the full words *is/has*, *had/would*, and so on.

--an allomorph distributed (in part) according to syntactic context, without necessarily attaching phonologically to a neighboring word. Into this category of phenomena fall examples of "external sandhi" involving phonological reduction, for instance the reduction of the English prepositon *to* to [tə] when it is in construction with a following NP (as in *to Pittsburgh*), but not when it is stranded (as in *Where to?*).

1.2. Phonological Relationships

Moreover, the phonological relationship between a full and reduced form can be expressed by rules of several different sorts, at least the following:

--a morpholexical rule, or "rule of allomorphy", distributing allomorphs according to morphosyntactic (and perhaps also phonological) context. Such rules account for suppletive and portmanteau variants, and for other cases in which the appropriate analytic move is simply to assign several morphophonemic representations to some (abstractly specified) morpheme or sequence of morphemes. Kaisse (1983) proposes that the alternants /hæz/ and /z/ for *has*, /wUd/ and /d/ for *would*, and so on are distributed by such rules: /z/ is the alternant of <HAVE, PRES, 3PER, SG> appearing when this formative is a clitic, /hæz/ the alternant appearing elsewhere; /d/ is the alternant of <WILL, PAST> appearing when this formative is a clitic, /wUd/ the alternant appearing elsewhere.

--a nonautomatic morphophonemic rule, deriving morphophonemic representations from morphophonemic representations. Such rules are subject to morphosyntactic conditions, and their effect is to alter phonological segments, rather than to "express" morphosyntactic entities. The rule of Sanskrit sandhi that says that the two words (and only the two words) "sas 'he' and esas 'this man' drop s before any consonant" (Emeneau 1958, 6) is such a rule.

--an automatic phonological rule, deriving phonological representations from phonological representations, in phonological contexts. the (variable) rules in English deleting word-initial [h] and reducing [æ] and other vowels to [ə], in words not bearing phrasal accent, exemplify this type of rule. Note that one effect of these particular rules is to supply [həd], [æd], and [əd] as variants of [hæd].

1.3. Highly Modular Theories

This descriptive *embarras de richesse* is to be expected in "highly modular" theories, those positing a number of grammatically significant modules, components, or strata. The problem in such theories is that any particular array of facts, including those concerning the distribution of full vs. reduced words, will initially appear to permit a large number of analyses, involving different assignments of rules to components.

However, in highly modular theories it is usually possible to argue for one analysis over others by appealing (a) to general characteristics of the various types of rules, and (b) to the possible interactions between rules of different types. A theoretical framework of interest makes a number of specific claims about characteristics of rules and about rule interactions, and in consequence it permits certain analyses and excludes others.

In what follows I will explore what happens if we try to adhere to the predictions of one highly modular theory, namely the "Interface Model" outlined by Zwicky (1982). Five components in this theory will be relevant to my discussion of Yiddish: a component of *syntax*, specifying the surface consitiuent structures of a language; a *cliticization* component, in which special clitics are positioned and in which clitics, simple and special, are attached to adjacent words (I will assume that the method of attachment is Chomsky-adjunction), to form "phonological words"; a set of morpholexical rules; a set of nonautomatic morphophonemic rules; and a set of automatic phonological rules, these last three types of rules as characterized briefly above.

As for interactional possibilities, I will make the simplest possible assumption about these five components, namely that the rules in one component apply, as a set, before the rules in the next component in the list. A major result of this linear ordering of autonomous components is that the applicability of rules in one component of the grammar can affect the applicability of rules in a later component in the list, by feeding or bleeding, but cannot affect the applicability of any rules in an earlier component in the list.

2. The Yiddish Facts

Among the locative expressions of Yiddish are some lacking an overt expression of a definite article, though they are understood definitely. The phrase in gloz 'in the glass' is a typical example. The noun gloz in this expression is understood definitely, and can even be anaphoric. Such anarthrous ('article-less') locatives are therefore not parallel to the anarthrous locative idioms of English (at school) and German (zu Hause 'at home'), the nouns of which cannot be anaphoric. A closer comparison is to German locative expressions with a contracted definite article, such as zum Bahnhof 'to the [railway] station' (though the comparison here is not perfect; see section 4 below).

I will view the Yiddish anarthrous locatives simply as extreme cases of reduction, to zero. The question is what sort of rule, or what sorts of rules, should be responsible for this reduction of a definite article ultimately to zero.

My presentation of the facts about locative expressions in Yiddish will follow Hall and Hall (1970; hereafter HH), a description of "the contemporary standard language" (HH, 49), though based on the judgments of one speaker, Beatrice Hall's mother, Fannie Lincoff.

First some background about the morphosyntactic categories of Yiddish. Yiddish has the same four cases, three genders, and two numbers as German. We are concerned here only with the dative case, since all prepositions govern this case. In the dative, the relevant gender distinctions are masculine/neuter, or MN, and feminine, or F. The dative articles are

(1) dem MN Sg; der F Sg; di Pl

No gender distinctions are expressed in the plural. In any case, the plural article di is not subject to reduction to zero; we will be concerned only with reductions of dem and der.

In addition to gender, two other factors are relevant for article/zero alternations. The first of these is the phonological shape of the locative preposition with which the article is in construction; we need to distinguish the prepositions ending in nasals, in particular n, from those ending in some other consonant and from those ending in a vowel:

(2) a. *in* 'in'; *fun* 'from'; *lebn* 'near'
b. *af* 'on'; *unter* 'under'
c. *bay* 'near, at'; *ću* 'to'

The other relevant factor has to do with the composition of the nominal expression following the definite article. What counts is whether this nominal consists of just a noun, without any modifiers, or whether there are modifying expressions in it:

(3) a. Unmodified: *almer* 'cupboard'; *gas* 'street'
b. Modified: [*inəm*] *groys m feld* '[in the] big field';
[*inəm*] *feld voz iz grin* '[in the] field that is green';
[*inəm*] *feld lebn park* '[in the] field near the park'

The full range of facts can now be illustrated, first for unmodified nouns (in (4)), and then for modified nouns (in (5)). Within each set I give, first, expressions involving MN nouns like *almer*, *feld*, *park*, *bet* 'bed', *hoyz* 'house', and *ekgas* 'corner'; and then expressions involving F nouns like *gas*, *tir* 'door', *štot* 'city', *šul* 'school', and *hant* 'hand'. Within one gender, I first give cases with *n*-final prepositions, then cases involving prepositions ending in other consonants, then cases involving prepositions ending in vowels

(4) a. i. *in almer*, *in feld*, *fun bet*, *lebn park*
ii. *afn almer* (= *af dem almer*)
iii. *baym hoyz* (= *bay dem hoyz*)

b. i. *in gas*, *lebn tir*, *fun štot*, *in šul*
ii. *af der gas*, *unter der hant*
iii. *ću der štot*

(5) a. i. *inəm grinəm feld*, *inəm feld lebn park*
ii. *afn grinəm feld*
iii. *baym groysn bet*

b. i. *in der šul afn ekgas*
ii. *af der gas lebn šul*
iii. *bay der šul in štot*

In (4) the article *dem* appears as zero, *n*, and *m*, while the article *der* alternates between zero (after *n*-final prepositions) and its full form (otherwise). In (5) *dem* appears as *əm*, *n*, and *m*, while *der* maintains its full form throughout. In tabular form:

	N___	C___	V___	
MN	Ø	*n*	*m*	Unmodified
F	Ø	*der*	*der*	
MN	*əm*	*n*	*m*	Modified
F	*der*	*der*	*der*	

3. The HH Analysis

The analysis suggested by HH has a core of four rules, preceded by a Rule A that marks objects of prepositions with the dative case, and followed by syntactic rules affecting relative clauses. Their Rules B through E are reformulated below; note that the rules are supposed to apply in the order given.

B. i. *dem* is realized as *m* after a [-cons] segment,
as *ən* otherwise;

ii. *der* is realized as *ən* after a [+nas] segment,
if the article is followed by an NP-final N.

C. Reduced articles become clitic to a preceding preposition.

D. i. The clitic definite article *ən* is realized as *əm* when it
follows a [+nas] segment and precedes N followed by S.

ii. Otherwise, it is reduced to *n*.

E. *nn* is reduced to *n*.

3.1 The HH Rules by Type

Let me simply suppose that these rules achieve their intended ends. Now consider how to classify each rule according to the scheme in section 1.3 above, in which a rule is syntactic, cliticizing, morpholexical, nonautomatic morphophonemic, or automatic phonological.

--Rule B distributes phonological forms for the dative definite articles according to their context. Since it is very difficult to see the realization of *dem*/*der* as *ən* as a phonological operation, Rule B seems fairly clearly to be a morpholexical rule.

--Rule C is a cliticization rule.

--Rule D has the effect of replacing a clitic definite article *ən* by *əm*, in a context that is partly phonological, partly syntactic; and of deleting the *ə* of this *ən* in all remaining contexts. The rule therefore effects phonological operations, but not automatic ones. It is a nonautomatic morphophonemic rule.

--Rule E, a degemination, is clearly an automatic phonological rule.

3.2 Ordering Problems in the HH Analysis

I now observe that at least four aspects of this analysis run counter to the component interaction assumptions outlined in section 1.3.

First, Rule B, a morpholexical rule, is ordered before Rule C, a cliticization rule. HH require this ordering to get B to feed C; B reduces articles, and C applies only to reduced articles. But the scheme in section 1.3 requires that cliticizations precede morpholexical rules.

Second, Rule C, a cliticization rule, is ordered before the relative clause rules of Yiddish. This is a consequence of two other ordering assumptions, Rule C ordered before Rule D (cliticization before morphophonemics, just as the Interface Model would require) and Rule D ordered before the relative clause rules (which I will examine in the next paragraph). The ordering of C before D is needed in HH's treatment because D applies only to clitic *ən*; C creates the structure to which D applies. In any event, the ordering of C before the relative clause rules is the opposite of the ordering required by the scheme in section 1.3.

Third, Rule D, a nonautomatic morphophonemic rule, is ordered before the relative clause rules. HH require this ordering because "modified noun" figures in the context of Rule D and they pick out modified nouns by looking for a noun followed by a clause. If the relative clause rules applied first, they would transform the single N+S structure into three alternatives, N+S (*feld voz iz grin*), N+PP (*feld afn eckgas*), and A+N (*grinəm feld*); then modified nouns could be picked out, it seems, only by an unrevealing disjunction of contexts. But the scheme in section 1.3 requires that syntactic rules, such as those affecting relative clauses, precede phonological rules of any sort, including nonautomatic morphophonemic rules.

Fourth, the appearance of an "unmodified N" condition in Rule Bii means that Rule B, a morpholexical rule, must also be ordered before the rules affecting relative clauses, which are syntactic. But the scheme in section 1.3 requries that syntactic rules precede morpholexical rules.

3.3 Sources of Problems

The HH analysis of Yiddish anarthrous locatives was formulated about 15 years ago, when issues of modularity were not as prominent as they are today--indeed, when Generative Semantics, with its assumption that no potential interaction between rules of different types was to be ruled out in principle, was gaining currency. The Halls saw quite clearly (56-7) that their analysis required that morphophonemic rules apply pre-cyclically; what is not so clear is whether they viewed the "problem in rule ordering" they referred to in their title as a blow to the foundations of grammatical theory (as I would be inclined to see it today), or as motivation for adopting the "one giant homogeneous component" Generative Semantics view.

It would scarcely be fair to castigate the Halls for failing to be prescient about developments in grammatical theory. The problems listed in the previous section must nevertheless be taken seriously now, in the context of the Interface Model and other highly modular theoretical frameworks. Two crucial assumptions give rise to these problems.

The first crucial assumption is that unmodified and modified nouns should be distinguished from one another by reference to an early stage in transformational derivations.

But almost no transformational grammarian would now derive adjectives modifying nouns by reduction of predicative relative clauses, so that the HH proposal to identify "modified N" as "N in construction with S" would no longer be available to most analysts. Fortunately, this is not the only way to generalize over nominals of the form A+N, N+S, and N+PP as against nominals of the form N. Surface constituent structure can be referred to directly to distinguish the two types of nominals, so long as Nom(inal) is a constituent, dominated by NP and dominating N. Given this relatively uncontroversial assumption about the constituent structures of Yiddish (and German and English), then "modified N" is simply "N that is not the only daughter of Nom.".

The second crucial assumption is the *dem* and *der* should alternate with zero by virtue of a series of reductions, of the form: *dem*/*der* -> *ən* -> *n* -> Ø. The weak link in this chain of reductions is the first.

This link is weak because the output at this stage, *ən*, is not an actually occurring alternant of *dem* or *der*, but rather is an intermediate representation hypothesized as a source for both *əm* and *n*. Note that a morpholexical rule is required at this initial point in the chain; the question then is why the zero alternant (or an *n* alternant that would automatically be subject to degemination) should not be directly derived by such a morpholexical rule. And if the zero or *n* alternant is derived directly, then the nasty ordering of a morpholexical rule before a cliticization rule is no longer necessary.

HH (54) provide some defense for *ən* as an intermediate stage in the derivation of *əm* and *n*: They cite a parallel alternation in the form of adjective endings, an alternation in the masculine genitive/dative/accusative and neuter genitive/dative morph, which is realized as *əm* after stems ending in a nasal and as *n* otherwise. They hypothesize a nonoccurring form *ən* as the basic representation, presumably by a kind of triangulation from the phonological shapes of the two actual alternants. But this analysis itself is quite shaky; *n* is clearly the "elsewhere" alternant and could easily be taken as the basic allomorph, with *əm* derived from it by a morphophonemic rule. In any case, I can see no satisfactory way to collapse the alternation between *n* and *əm* in adjective forms with the similar alternation in reduced definite articles; the latter alternation is contingent on the modified/unmodified distinction, but the former is not.

A moment's reflection on the forms in the table of section 2 should suggest that the zero alternant of *dem* after a prepositon ending in *n* is surely the *historical* outcome of reduction, assimilation, and degemination, and that the extension of this zero alternant to the other dative definite article, *der*, was analogical. The HH analysis does not attempt to recapitulate all the steps in this historical development (Rule B, in particular, is not a direct reflection of a historical change), but it does make some effort to break down the ultimate reduction to zero into steps. My suggestion is that there should be no special preference for stepwise reductions in morphophonology; and if such stepwise reductions would run counter to a general component interaction assumption, then they must be rejected, so long as a palatable alternative is available.

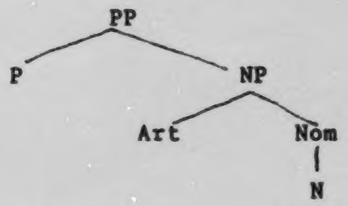
4. Alternative Analyses

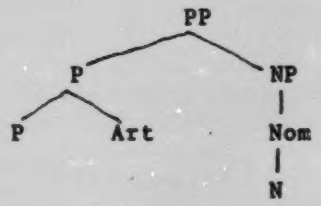
As it turns out, there are several analyses, differing in a number of details, which are consistent with the Interface Model assumptions about component ordering. (To some extent, the choice among these alternatives depends upon further information about Yiddish morphology and syntax that I do not have.)

In particular, it is possible to see the reduced and zero definite articles of Yiddish, not as clitics attached to a preceding preposition, but rather as inflectional affixes on that preposition. Though the corresponding contractions, or *Verschmelzungsformen*, of German, like the *zum* of *zum Bahnhof*, are usually assumed to be combinations of a preposition, here *zu*, and a weak or clitic form of a definite article, here *m* corresponding to the full form *dem*, it has been argued--by Hinrichs in this volume--that the *Verschmelzungsformen* are actually prepositions inflected for case and number (and of course definiteness).

The German and Yiddish facts are not entirely parallel, since the German P+Art contractions lack an anaphoric use, whereas the corresponding forms in Yiddish can be used anaphorically, as I pointed out in section 2 above. It now turns out to be important whether the Yiddish reduced forms have *deictic* uses. The German contracted forms do not; as a result, the contractions are never obligatory, the full or uncontracted forms conveying deixis. The same is true of Yiddish (HH, fn. 3): An expression like *af dem almer* (with emphasis on *dem*) is grammatical on a deictic reading 'on THAT cupboard' and thus contrasts with *afn almer* 'on the cupboard'. It follows that whatever rule creates "contracted forms", whether it is a cliticization rule or a rule distributing morphosyntactic features realized as inflections, can be general and optional.

One analysis along these lines assumes that Yiddish singular definite articles cliticize, generally but optionally, to a preceding preposition, yielding two types of singular definite PP's in the language:





A set of morpholexical rules then "spell out" Art in P+Art combinations:

--the dative MN definite article is realized as *əm* when P ends in a nasal and the following N is modified;

--otherwise, it is realized as *m* when P ends in a vowel;

--otherwise, it is realized as *n*;

--the dative F definite article is realized as *n* when P ends in a nasal and the following N is unmodified.

These rules yield P+Art combinations like *in+n* and *fun+n*, which will yield *in* and *fun* by the automatic phonological rule of degemination.

I assume, finally, that a universal principle marks as ungrammatical any morphological combination that receives no phonological realization. As a consequence of this principle and the morpholexical rules listed above, the feminine definite article has a reduced form in only one context, following a P ending in a nasal and preceding an unmodified N. Since cliticization was optional, the full form *der* is available in all the other contexts.

This analysis is consistent with syntax before cliticization before morpholexical rules before phonology. The syntactic component provides the appropriate surface constituent structures, which are then (optionally) altered by cliticization rules, the outputs of which are the structures within which morpholexical rules assign allomorphs, the resulting strings of segments being subject to phonological rules. The analysis is roughly as complex as the HH treatment--there seems to be a fair amount of irreducible synchronic arbitrariness here--but incorporates no "problem of rule ordering".

A number of details in this analysis might be improved upon, with the exercise of some ingenuity or the infusion of further relevant data or both. I do hope to have shown that a not implausible analysis is available that is consistent with highly modular theoretical frameworks like the Interface Model.

Two final remarks. First, the Halls mention a further case in which the feminine definite article has a reduced form. They say that in "fast speech" *der* can reduce to *n* when it follows a consonant-final preposition (like *af*) and precedes an unmodified noun; *af der gas* has the "fast speech" variant *afn gas*. Surely it is *casual* and not *fast* speech that is relevant here; it is mind-boggling to imagine how speed of speech could reduce *der* to *n* in the context of *f*. What we are dealing with here is an extension, in informal style, of the morpholexical rule for clitic *der*: The rule is extended to provide the *n* allomorph, not only after nasal-final prepositions, but after consonant-final prepositions in general.

Second, although I do not have the space to pursue the matter here, I should point out that the references to "unmodified" and "modified" N have survived the translation from the HH analysis to mine. I believe that the modified/unmodified distinction is one of the constraining or conditioning factors that linguistic theory must make available in morphophonology, and I expect that the need for this distinction could be supported by examples from many languages other than Yiddish. It is especially notable that this distinction can be defined on the basis of surface constituent structure, so that it is available even in nontransformational theories of syntax; in fact, the distinction can be defined on the basis of individual branchings within surface constituent structures, so that it is available even in pure phrase-structure approaches to syntax.

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Attachment of Articles and Prepositions in German: Simple Cliticization or Inflected Prepositions*

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0. Introduction

It is a well-known fact that in Modern German certain forms of the indefinite article, such as *ein* and *eine*, as well as certain forms of the definite article, such as *der*, *das*, *dem*, and *den*, can attach to preceding prepositions. As the examples in (1)-(4) show, combinations of prepositions and attached articles contrast with combinations of prepositions and *un*attached articles.

(1) a. Für 'ne Mark kannst Du 30 Sekunden telefonieren.
'For one mark you can call for 30 seconds.'
b. Für eine Mark kannst Du 30 Sekunden telefonieren.
(2) a. Für'n Groschen kann man nicht mehr viel kaufen.
'For one Groschen one can't buy much any more.'
b. Für einen Groschen kann man nicht mehr viel kaufen.
(3) a. Ich habe die Kette für'n Basar gemacht.
'I made the necklace for the fundraiser.'
b. Ich habe die Kette für den Basar gemacht.
(4) a. Für's Mittagessen ist alles vorbereitet.
'Everything has been prepared for lunch.'
b. Für das Mittagessen ist alles vorbereitet.

In this paper I will mainly concentrate on the attachment of definite articles. However, the analysis of attached definite articles could easily be extended to indefinite articles as well because the two phenomena are strictly parallel in their morphological and syntactic behavior. Chart (5) shows that the attachment of definite articles is quite productive in the sense that it occurs in all cases that can be governed by prepositions and in that it occurs with virtually all prepositions.[1]

(5) *Inventory of Preposition/Article Combinations (Case for Case)*

Case	Attmnt.	Masc. Sg.	Fem. Sg.	Neutr. Sg.	Plural
Genitive	att.	statt's	statt'r	statt's	statt'r
	unatt.	statt des	statt der	statt des	statt der
Dative	att.	vor'm	vor'r	vor'm	vor'n
	unatt.	vor dem	vor der	vor dem	vor den
Accusative	att.	gegen'n	-	gegen's	-
	unatt.	gegen den	gegen die	gegen das	gegen die

One way of interpreting examples such as (1)-(5) is to regard the attachment of determiners to preceding prepositions as the result of a phonological process. This view is taken in Schaub (1979), who identifies the attachment of determiners to prepositions as a "coarticulatory phenomenon" and who coins the term "Verschmelzungsform" to convey the idea that the article phonologically fuses together with a preceding preposition. Although Schaub does not provide any detailed phonological derivations, she might have a derivation as in (7) in mind for a string like (6).

(6) für das Auto
(7) [fyr das awto]
[fyr dəs awto]
* [fyr əs awto]
[fyr s awto]

However, there are at least four problems that such a purely phonological solution cannot account for. I will discuss these counterarguments against a phonological solution in the next section of this paper, before I consider two morphological treatments for the problem at hand.

1. Four arguments against a phonological treatment

The first counterargument against a phonological solution concerns the process of phonological weakening that such an analysis presupposes. Not all of the intermediate stages of the derivation in (7) are possible pronunciations of (6) in casual speech. At least in my dialect, the stage which is marked by an asterisk in (7) is not a possible pronunciation for (6). However, if the pronunciation [fyr s awto] were in fact the outcome of a series of phonological weakenings ("lenitions"), such a gap in pronounceability would be highly unexpected, unless the intermediate form violated some phonotactic constraint in the language, which is not the case here.

Second, it turns out that the Verschmelzungsform, i.e. the form which has the article attached to the preposition, is not just an optional variant of the preposition with a following unattached article; instead, each form is restricted to certain uses of the definite article.

In German the definite article can be used in at least three different ways, as examples (8)-(10) indicate.

(8) Als ich aus dem Fenster blickte, sah ich ein Auto vor dem Haus. Als ich nach einigen Minuten zurückkehrte, war das Auto verschwunden.
'When I looked out of the window, I saw a car in front of the house. When I came back a few minutes later, the car was gone.'

(9) Das Auto verschmutzt die Umwelt mehr als jedes andere Verkehrsmittel.
'Cars pollute the environment more than any other means of transportation.'

(10) Ich möchte den Pullover, nicht diesen.
'I would like that sweater, not this one.'

(8) exemplifies what we might call an *anaphoric* or *referential* use of the definite article. The use of the definite article in the noun phrase *das Auto* establishes an anaphoric link between the referent of this NP and the referent the NP *ein Auto* in the preceding sentence. In (9) the definite article is used in its *generic* sense. *Das Auto* in (9) does not refer to any particular car; rather it refers to cars as a "natural kind", to borrow the terminology of Carlson (1977). In (10) the definite article is used *deictically*. In its deictic use the definite article is stressed, which distinguishes this usage from all others.

After this necessary digression, we can analyse in more detail how the usage of the Verschmelzungsform of a definite article differs systematically from that of the unattached articles.

(11)

	Anaphoric Use	Generic Use	Deictic Use
Verschmelzungsform	*	O.K.	*
unattached definite article	O.K.	*	O.K.

As the chart in (11) shows, the Verschmelzungsform and the unattached form of the definite article are semantically in complementary distribution. Thus, in a sentence like (12) the definite article *der* can be used deictically, or it can be used anaphorically, if (12) is embedded in a discourse like (13).

(12) Sie geht gerne zu der Schule.
'She likes to go to this school.'

(13) Karen geht schon im zweiten Jahr zum Heinrich-Heine-Gymnasium. Es gefällt ihr dort gut. Sie geht gerne zu der Schule.
'Karen has been going to the Heinrich-Heine-Gymnasium for two years. She likes it there. She enjoys going to that school.'

However, when the generic use of the definite article is intended, i.e. if the speaker wants to express the proposition that Karen likes to go to school, the use of the Verschmelzungsform is obligatory. In this case, (12) is unacceptable; instead (14) has to be used.

(14) Karen geht gerne zur Schule.
'Karen likes to go to school.'

A purely phonological account of the attachment of the definite article to preceding prepositions is at a loss to explain this systematic semantic/pragmatic difference between attached and unattached forms. Even though the relationship between the semantic component and other components of a grammar may not be completely understood at the present time, I know of no linguistic theory and of no example of a segmental phonological rule in any language that would lead to the claim that the application of a segmental phonological rule can cause a difference in meaning.

The third counterargument against a phonological analysis of the Verschmelzungsform concerns evidence from idioms. If the attachment of the definite article were merely a phenomenon of coarticulation, as Schaub claims, we would expect the use of the Verschmelzungsform to be optional in all contexts. However, for most idioms this is not the case. Thus, we find patterns as in (15)-(17).

(15) a. Wir machen eine Fahrt ins Grüne.
'We are taking a trip to the countryside.'
b. *Wir machen eine Fahrt in das Grüne.
(16) a. Wer im Glashaus sitzt, soll nicht mit Steinen werfen.
'People who live in glasshouses shouldn't throw stones.'
b. *Wer in dem Glashaus sitzt, soll nicht mit Steinen werfen.
(17) a. Er traf ins Schwarze.
'He hit the bullseye.'
b. *Er traf in das Schwarze.

(The (b) examples are, of course, not actually ungrammatical; they just don't have the idiomatic meanings.)

Furthermore, the the use of the Verschmelzungsform is obligatory in certain syntactic constructions and is prohibited in others. For the superlative construction of adjectives and adverbs the forms *am* (from *an dem*) and *im* (from *in dem*) must be used. Thus, (18a) and (19a) are grammatical, (18b) and (19b) ungrammatical.

(18) a. Gottlieb schwimmt am schnellsten.
'Gottlieb is the fastest swimmer.'
b. *Gottlieb schwimmt an dem schnellsten.
(19) a. Es stört mich nicht im geringsten.
'It does not bother me in the slightest.'
b. *Es stört mich nicht in dem geringsten.

On the other hand, for the use of *der*, *die*, and *das* in relative clauses an attachment to a preceding preposition is prohibited. Compare (20) and (21).

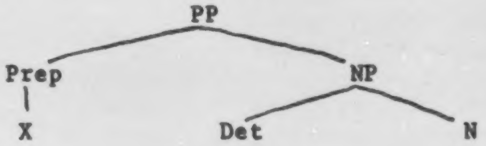
(20) a. Das Haus, in dem Fritz wohnt, wird verkauft.
'The house in which Fritz lives is for sale.'
b. *Das Haus, im Fritz wohnt, wird verkauft.
(21) a. Das Konzert, für das ich Karten gekauft habe, fällt aus.
'The concert for which I bought tickets was cancelled.'
b. *Das Konzert, fürs ich Karten gekauft habe, fällt aus.

Of course, one might claim that the morphemes *der*, *die*, and *das* are not to be considered as forms of the definite article when occurring in relative clauses, but rather as homophonous relative pronouns. Notice, however, that this counterproposal cannot salvage a phonological solution to the attachment of definite articles. If attachment were phonologically productive, we would expect it to extend to the homophonous relative pronouns as well. However, as (20) and (21) show, this is not the case.

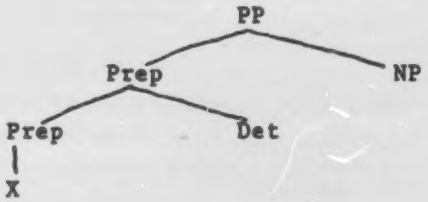
2. Two morphological analyses and how to decide between them

Now that I have ruled out the possibility of a phonological explanation for the attachment of the definite article to preceding prepositions, I will consider two alternative solutions that seem to be left open. One approach would argue that the attachment of the article is an instance of cliticization. This view is taken in Zwicky (1982) and would amount to treating the attachment of the article as originating in a readjustment rule that would convert structures like (22) into structures like (23).

(22)



(23)



The readjustment rule would Chomsky-adjoin the determiner to the preposition; the determiner can then cliticize to the preposition. Since the cliticized version of the article occurs in the same syntactic position as the unattached form of the article, the attachment of the definite article in German would be an example of what Zwicky (1977) calls "simple cliticization".

The view that the attachment of the definite articles to preceding prepositions involves readjustment of syntactic structure and subsequent cliticization is consistent with all the counterarguments cited above against a phonological solution. It does not have to rely on a series of phonological weakenings, as Schaub's solution does. The systematic difference between the semantic/pragmatic properties of the attached and the unattached forms of the article will come as no surprise because the cliticized and the non-cliticized version must have separate listings in the lexicon, so that they can differ in meaning, say between a deictic and anaphoric reading on the one hand and a generic reading on the other hand. The only slight problem for the cliticization approach that arises from the data discussed so far involves the superlative construction. Recall that for the superlative construction of adjectives and adverbs the use of the forms *im* and *am* is obligatory, whereas their unattached counterparts *in dem* and *an dem* are unacceptable. Since in all other cases the cliticization of the article seems to be optional, in the sense that both the non-cliticized and cliticized version are grammatical (albeit with certain systematic semantic differences), the superlative construction represents something of an exception. However, this construction involves only two prepositions in their dative singular forms. Therefore, it can plausibly be argued that these two prepositions have lexically marked forms for the superlative of adjectives and adverbs, rather than deriving this construction by a combination of cliticization and readjustment.

Moreover, the cliticization approach seems to have the advantage of being easily generalizable to the attachment of the definite article to material other than prepositions. It turns out that in casual speech the definite article can attach to anything preceding it, as long as the preceding material is in the same clause.

(24) Er hat's neue Auto auf Raten gekauft.
'He has bought the new car on an installment plan.'
(25) Er erreicht langsam's Rentenalter.
'He slowly reaches the age for retirement.'
(26) Er hat Maria'n teuren Pelzmantel gekauft.
'He bought Maria the expensive fur coat.'
(27) Sie brachte's Meerschweinchen ins Zimmer.
'She brought the guinea pig into the room.'
(28) Sie hat in Frankreich's grosse Glück gefunden.
'She found true happiness in France.'

In (24) the definite article attaches to a preceding auxiliary, in (25) to an adverb, in (26) to a noun phrase, in (27) to a main verb, and in (28) to a prepositional phrase. In general, there seems to be no restriction on the type of preceding material the definite article can attach to in German. This situation resembles that of the cliticization of *is* and *are* in English. The clitic forms '*s* and '*re* attach to any preceding syntactic material in the same clause. If there is no preceding material, they will "by default" attach to the following material. This is also true of the definite article in German. Consider the examples in (29) and (30).

(29) 's Geschäft ist heute geschlossen.
'The store is closed today.'
(30) 'n neuen Mantel kann ich mir nicht leisten.
'I can't afford a new coat.'

If we adopt Zwicky's solution of treating the attachment of articles to prepositions as simple cliticization, then this attachment would be just one particular instance of a much more general rule of cliticizing articles to any preceding syntactic material.

However, upon closer inspection the attachment of articles to any preceding material and the combination of articles and prepositions turn out to be quite dissimilar. One aspect that distinguishes the two phenomena is their dependence on the rate of speech. The case of articles combining with prepositions is independent of the rate of speech, whereas the attachment of articles to preceding syntactic material is highly dependent on the rate of speech. Thus, if sentences (24)-(30) are uttered slowly, they simply become unacceptable.

It is especially instructive to compare the two types of processes in their behavior with respect to parenthetical remarks or pauses.

(31) a. Er ist jetzt schon zum, eh, eh, fünften Mal zu spät gekommen.
'This is the eh, eh, fifth time that he has been late.'
b. *Er ist jetzt schon zu, eh, eh, 'm fünften Mal zu spät gekommen.
(32) a. Sie wurde am, wenn ich mich nicht irre, 13. September geboren.
'She was born on, if I'm not mistaken, September 13th.'
b. *Sie wurde an, wenn ich mich nicht irre, 'm 13. September geboren.
(33) a. Sie trug, wenn ich mich recht erinnere, 's goldene Halsband.
'She was wearing, if I remember correctly, the golden necklace.'
b. *Sie trug's, wenn ich mich recht erinnere, goldene Halsband.
(34) a. Er hat, glaube ich, 'n neuen Wagen zur Arbeit mitgenommen.
'He took, I think, the new car to work.'
b. *Er hat'n, glaube ich, neuen Wagen zur Arbeit mitgenommen.

The preposition/article combinations in (31) and (32) are unaffected by parenthetical remarks and hesitation pauses in that they can occur immediately before such pauses, whereas the attachment of articles to preceding syntactic material is sensitive to such interruptions, as the grammaticality of (33a) and (34a) and the ungrammaticality of (33b) and (34b) show. If the article is separated from preceding material by a pause or parenthetical remark, then it has to attach to the following material. Thus, it follows the "default case", just as if there were no preceding material at all.

As a result, the attachment of articles to preceding syntactic material and the combination of articles with prepositions are quite distinct processes. To use the terminology of Kaisse (forthcoming), the former process is a *fast speech rule*, whereas the latter is a *rule of connected speech*.

So far, I have presented only negative evidence, to the effect that the combinations between prepositions and articles cannot be considered just an instance of a more productive cliticization attachment of articles to any preceding material. I will now discuss some positive evidence that conclusively shows that the prepositions that combine with forms of the definite article have to be considered inflected prepositions, rather than hosts of simple clitics. My argument presupposes an organization of grammar that has been suggested in recent work by Arnold Zwicky and Geoffrey Pullum. Pullum/Zwicky have argued that a grammar should be viewed as a system with high modularity. That is, a grammar will consist of a number of different components, which have distinct functions and are governed by distinct principles, which are ordered with respect to each other, and which are allowed only limited interaction with one another. Pullum/Zwicky adopt the traditional distinction between syntax and morphology, but argue that the morphological component of a grammar should be divided into at least three different submodules: word formation rules, allomorphy rules and morphophonemic rules. Moreover, Zwicky and Pullum assume that there is a component of readjustment and cliticization rules which intervenes between the syntactic and the morphological components. The rules of readjustment and cliticization have the function of readjusting syntactic structure so that the readjusted structure can serve as input to the rules of morphology and phonology. Such a readjustment of syntactic structure is necessary because, as has often been observed, the syntactic structure of a sentence need not be identical to its prosodic structure. The sentence *This is the cat that caught the rat that ate the cheese* is the classical example cited in this context. The pauses between prosodic phrases do not coincide with the major breaks in syntactic constituent structure. Therefore, in certain cases the syntactic structure has to be modified before prosodic structure can be assigned. The readjustment and cliticization component serves exactly this purpose. The cliticization of English pronominal objects and the reduction and cliticization of English auxiliaries are typical examples of such cliticization rules.

As mentioned above, Zwicky (1982) claims that the attachment of definite articles in German involves a readjustment and cliticization rule in very much the same fashion as auxiliary reduction in English. Such an analysis makes strong predictions about the location of this rule in the overall grammar. Since the components of the grammar are ordered in such a way that the rules of one component precede all rules of the following component, Zwicky's analysis predicts that the putative cliticization of definite articles in German should not affect the operation of any syntactic rule. This prediction follows from the assumption that the syntactic component precedes the component of readjustment and cliticization.

Therefore, under the view that all readjustment and cliticization rules follow all syntactic rules, as suggested by the syntax-morphology interface model of Pullum/Zwicky, we would expect no syntactic rule to affect the combinations of prepositions and definite articles, if these were true cases of simple cliticization. However, there is at least one syntactic rule that these article-preposition combinations *are* sensitive to, namely the rule of coordination. Consider the pattern in (35).

(35) a. vor'm und nach'm Essen
'before and after the meal'
b. Über'm und unter'm Tisch
'above and underneath the table'
c. vor'm und hinter'm Haus
'in front of and behind the house'
d. zum und vom Arbeitsplatz
'to and from work'

The examples in (35) show that preposition-article combinations can be conjoined. However, someone favoring a cliticization analysis might well point out that corresponding combinations of unattached articles and prepositions are grammatical as well:

(36) a. vor dem und nach dem Essen
b. Über dem und unter dem Tisch
c. vor dem und hinter dem Haus
d. zu dem und von dem Arbeitsplatz

That is, one might argue that the conjoined structures in (35) can be derived from the corresponding structures in (36) by a readjustment and cliticization process. Notice, however, the ungrammaticality of the phrases in (37).

(37) a. *vor dem und nach'm Essen
b. *Über dem und unter'm Tisch
c. *vor dem und hinter'm Haus
d. *von dem und zum Arbeitsplatz

If (35) involved cliticization as an instance of a more productive rule of attaching articles to any preceding material, we would expect that its application to each of the conjuncts, such as to *vor dem* and *nach dem* in (36a) should be optional, and therefore we would expect the strings in (37) to be grammatical. They are, however, unacceptable, and therefore the attachment of the articles in (35) cannot involve cliticization. Rather, what are conjoined in (35) must be single constituents and not cliticized versions of prepositions.

Once we recognize that combinations of prepositions and attached definite articles act as simple constituents in syntactic rules, we are left with two options. We could analyse them either as inflected prepositions or as case-marked definite articles. Regarding them as case-marked articles would lead to a proliferation of cases in German. Furthermore, this analysis would have to regard it as a merely accidental feature that a noun governed by a preposition plus an attached article is always identical in its case marking to a noun governed by the same preposition plus an unattached article. Therefore, combinations of prepositions and attached articles have to be considered inflected prepositions rather than case-marked articles.

Preposition-article combinations in German are inflectional in the same way as the English verbal inflection *n't*. As Zwicky/Pullum (1983) point out, *n't* crucially interacts with the syntactic rule of Subject-Auxiliary Inversion (SAI). If *n't* were a simple clitic, it would have to cliticize to the preceding auxiliary before SAI applies, because a sentence like (39) is ungrammatical, while a sentence like (38) is not. However, this analysis involves a rule-ordering paradox, if we want to maintain that all syntactic rules precede all cliticization rules.

(38) Haven't you seen this movie.
(39) *Have not you seen this movie.

For the case of English *n't* it is the syntactic rule of Subject-Auxiliary Inversion that provides crucial evidence for treating *n't* as inflectional; for the case of German preposition-article combinations it is the rule of coordination that leads to such an analysis.

Zwicky/Pullum (1983:503) provide further criteria to distinguish between inflection and cliticization, most of which apply equally in the case of English *n't* and German inflectional prepositions:

(40) *Cliticization versus Inflection* (Zwicky/Pullum)

A. Clitics can exhibit a low degree of selection with respect to their hosts, while affixes exhibit a high degree of selection with respect to their stems.
B. Arbitrary gaps in the set of combinations are more characteristic of affixed words than of clitic groups.
D. Semantic idiosyncrasies are more characteristic of affixed words than of clitic groups.

Criterion A clearly applies to the case at hand, if we compare the inflectional prepositions to the fast speech rule that attaches articles to any preceding syntactic material. Article inflections are restricted to prepositions only; fast speech attachment is unrestricted, in that attachment does not depend on the lexical or phrasal category of the preceding material in any way. Criterion B is applicable because there is a gap in the inflectional paradigm, in that neither of the articles *die* can ever form an inflectional ending for a preposition. Criterion D is clearly satisfied, if we consider the systematic semantic distinction between the generic use of inflected prepositions and the anaphoric and deictic use of uninflected prepositions and articles.

Let me in conclusion suggest three syntactic rules for German that will generate the relevant strings for examples such as (35) and (36). Without defending my choice, I will adopt the framework of Generalized Phrase Structure Grammar (GPSG), rather than a transformational analysis. I propose the following two rules to expand prepostional phrases in German.

(41)
$$< n\,, \quad \underset{\begin{array}{l}{[}\alpha\ \text{case}{]}\\ {[}\beta\ \text{number}{]}\\ {[}\gamma\ \text{gender}{]}\\ {[}\delta\ \text{definite}{]}\end{array}}{\bar{\bar{P}}}\, [\quad \bar{P} \quad \bar{N} \quad]\,, \ldots >$$

(42)
$$< m, \quad \underset{{[}\alpha\ \text{case}{]}}{\bar{\bar{P}}}\, [\quad \bar{P} \quad \bar{\bar{N}} \quad]\,, \ldots >$$

The rule in (41) will generate prepositional phrases with inflected prepositions, while the rule in (42) generates "ordinary" prepositional phrases consisting of an uninflected preposition and a noun phrase (N). The features attached to the P node will be copied onto the P node by the Head Feature Convention of Gazdar/Pullum (1982) and from the P node to the N and N nodes, respectively, by the Control Agreement Principle of Gazdar/Pullum (1982). The rules in (41) and (42) will generate strings like *vorm Haus* and *vor dem Haus*, respectively. To generate conjoined strings of inflected prepositions I will adopt coordination rules as proposed in Gazdar (1981:158).

(43) $< k , [_{\alpha}\ \alpha_1 \ldots \underset{[\beta]}{\alpha_n}\ ] , \beta'(\alpha'_1, \ldots , \alpha'_n) >$

where $\beta \in \{und, oder, \ldots\}$ and α is any syntactic category.

(44) $< 1 , [_{\underset{[\beta]}{\alpha}}\ \beta\ \alpha\ ] , \alpha' >$

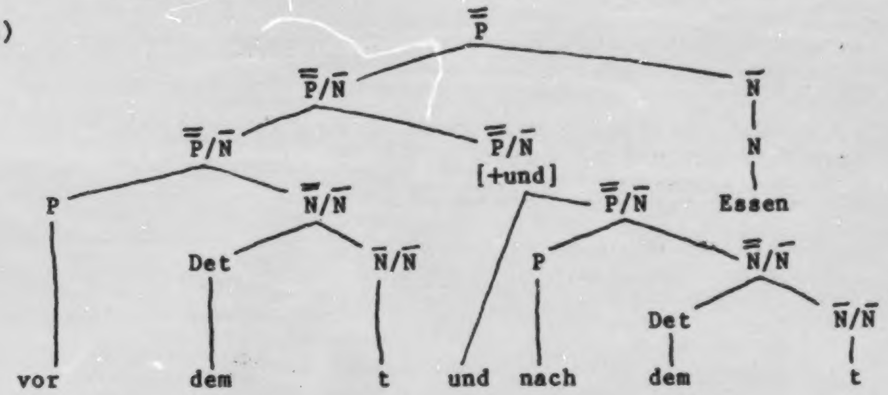
where $\beta \in \{und, oder, \ldots\}$ and α is any syntactic category.

For strings such as (36) I suggest the following derived phrase structure rule.

(45) $[_{\bar{\bar{P}}}\ \ \bar{\bar{P}}/\bar{N}\ \ \ \bar{N}\ \ ]$

Rule (45) will assign the following structure to the conjoined phrase *vor dem und nach dem Essen*.

(46)



$\bar{\bar{P}}$
$\bar{\bar{P}}/\bar{N}$
$\bar{N}$
$\bar{\bar{P}}/\bar{N}$
$\bar{\bar{P}}/\bar{N}$
[+und]
N
P
$\bar{\bar{N}}/\bar{N}$
$\bar{\bar{P}}/\bar{N}$
Essen
Det
$\bar{N}/\bar{N}$
P
$\bar{\bar{N}}/\bar{N}$
Det
$\bar{N}/\bar{N}$
vor
dem
t
und
nach
dem
t

Notice that the rules stated above, together with the "Across-the-Board-Principle" which follows automatically from the version of Gazdar's Coordination Schema in (43), will not generate any of the ungrammatical strings in (37). These phrases are ruled out because the Coordination Schema allows coordination only between identical structures. However, since *vor dem Essen* and *nach'm Essen* are generated by two different syntactic rules, they are not conjoinable and thus cannot serve as input to the derived phrase structure rule in (45).

Footnotes

* I would like to thank Arnold Zwicky for many helpful comments on this paper.

[1] For a complete list of occurring forms see Schaub (1979), p. 94.

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A Non-endoclitic in Estonian*

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Among the examples of endoclitics cited in the literature on clitics is the emphatic clitic *-gi* ~ *-ki*[1] of Estonian. Upon closer scrutiny it turns out that this is not an instance of endoclisis, but a situation in which two morphemes exist, each having different positioning in the word and different meaning. I begin by looking at Zwicky's (1977) original citation of *-gi* as an endoclitic. Next, I summarize a proposed account of the surface phenomenon of endoclisis as the result of external clitic attachment followed by a rule of morph metathesis. I reject this analysis for Estonian *-gi* and argue instead that the "endoclitic" *-gi* is really a separate morpheme from the emphatic enclitic *-gi*. It occurs only in certain adverbials[2] and indicates indefiniteness rather than emphasis. I further argue that the five adverbials in question constitute lexicalized word-forms and suggest the possibility that the "endoclitic" *-gi* appearing in these adverbials is a derivational affix and not a clitic at all. Finally, I explore the historical origin of the apparent "infixation" of indefinite *-gi*, arguing that the source for this is analogy rather than infixation, endoclisis, or metathesis.

Zwicky (1977), receiving his information from Ilse Lehiste, is the first person in the literature to describe Estonian *-gi* as an endoclitic bound word. He says that it

> "has the syntactic freedom of the typical bound word, and in addition ... fails to condition at least one rule of internal sandhi ([n] fails to assimilate to [ŋ] before *-ki*, though [n] regularly assimilates to velars word internally, see Lehiste (1960:39). The morpheme is normally enclitic. However, when added to interrogative words (making them indefinite), *-ki* may either follow or precede a number of case suffixes" (Zwicky 1977:8)

He goes on to note the alternative orderings of the morpheme *-gi* and the case endings[3] in *keegi* 'somebody, someone' and *miski* 'something, anything'. The paradigms for these two are given below. (The hyphens separate the morpheme boundaries.)

NOMINATIVE	kee-gi	---	mis-ki	---
GENITIVE	kelle-gi	---	mille-gi	---
PARTITIVE	keda-gi	---	mida-gi	---
ILLATIVE	kelle-sse-gi ~	kelle-gi-sse	mille-sse-gi ~	mille-gi-sse
INESSIVE	kelle-s-ki ~	kelle-gi-s	mille-s-ki ~	mille-gi-s
ELATIVE	kelle-st-ki ~	kelle-st-ki	mille-st-ki ~	mille-gi-st
ALLATIVE	kelle-le-gi ~	kelle-gi-le	mille-le-gi ~	mille-gi-le
ADESSIVE	kelle-l-gi ~	kelle-gi-l	mille-l-gi ~	mille-gi-l
ABLATIVE	kelle-lt-ki ~	kelle-gi-lt	mille-lt-ki ~	mille-gi-lt
TRANSLATIVE	kelle-ks-ki ~	kelle-gi-ks	mille-ks-ki ~	mille-gi-ks

ESSIVE	kelle-na-gi ~ kelle-gi-na	mille-na-gi ~ mille-gi-na
TERMINATIVE	kelle-ni-gi ~ kelle-gi-ni	mille-ni-gi ~ mille-gi-ni
ABESSIVE	kelle-ta-gi ~ kelle-gi-ta	mille-ta-gi ~ mille-gi-ta
COMITATIVE	kelle-ga-gi ~ kelle-gi-ga	mille-ga-gi ~ mille-gi-ga

In the other indefinite adverbials, however, the order of case ending is fixed. For example, *millalgi* 'at some time, at any time, ever' has -*gi* outside the adessive -*l*, and the opposite ordering (**milla-gi-l*) is ungrammatical. In *kusagil* ~ *kuskil* 'somewhere, anywhere' the opposite prevails: -*gi* lies inside the adessive -*l*, with the other ordering ungrammatical (**kusa-l-gi*, **ku-l-gi*). See the *kuski* paradigm below[4]. *Mingi* 'some, a certain, a kind of'[5] appears to have the -*gi* morpheme inside the case endings in its paradigm.

NOMINATIVE	mingi	---
GENITIVE	mingi	---
PARTITIVE	mingi-t	---
ILLATIVE	mingi-sse	ku-hu-gi
INESSIVE	mingi-s	ku-s-ki
ELATIVE	mingi-st	ku-st-ki
ALLATIVE	mingi-le	kus-ki-le ~ kusa-gi-le
ADESSIVE	mingi-l	kus-ki-l ~ kusa-gi-l
ABLATIVE	mingi-lt	kus-ki-lt ~ kusa-gi-lt
TRANSLATIVE	mingi-ks	---
ESSIVE	mingi-na	(ku-na-gi[6])
TERMINATIVE	mingi-ni	---
ABESSIVE	mingi-ta	---
COMITATIVE	mingi-ga	---

Note that the *kuski* paradigm actually has both orderings. For the "internal local cases" (i.e. the illative, inessive, and elative) the case endings lie inside the -*gi* morpheme. For the "external local cases" (i.e. the allative, adessive, and ablative) the case ending lies outside it. There is, in addition, a difference in the root: the internal local cases take *ku*-; the external local cases take kus- or *kusa*-.

The morpheme -*gi* in Estonian has the following placements with respect to the case endings in indefinite adverbials:

INSIDE
external local cases of *kuski*
monomorphemic *mingi*

BOTH INSIDE AND OUTSIDE
oblique cases of *keegi* and *miski*

OUTSIDE
internal local cases of *kuski*
millalgi
non-oblique (or direct) cases of *keegi* and *miski*

[Note, by way of comparison, that the clitic -*gi* normally attaches *outside* the case endings, e.g. *maja-s-ki* 'even in the house' ~ **maja-gi-s*.]

In an early draft of a book in progress, Zwicky and Pullum attempt to restrict the notion 'cliticization', arguing that clitics are attached externally to their hosts and that endoclitics are the result of morph metathesis rules.[7] This approach works fine for *miski* and *keegi* above. The clitic -*gi*, under this view, is attached externally to inflected *kee*- or *mis*-, as in (a), and optionally metathesizes with the case ending, as in (b).

(a) CLITICIZATION
$[[[\ \text{kelle-}\ ]\ \text{-le}\ ]_{\text{ALLATIVE}}\ \text{-gi}\ ]_{\text{CLITIC}}$

(b) MORPH METATHESIS kelle-gi-le

This rule, however, would have to apply obligatorily for the external cases of *kuski*.

In the following I argue against any synchronic analysis in which the morpheme -*gi* is seen as an endoclitic. First, I point out that the morpheme in question is one that indicates indefiniteness and does not signal emphasis, as does the enclitic -*gi*. Second, I argue that these five adverbials in which "endoclitic" -*gi* appears are lexicalized word-forms, semi-frozen polymorphemic adverbs. There is no morph metathesis rule, merely memorized paradigms having variants with different orderings. Finally, I will explicate an account of the historical origin of the apparent "infixation" of -*gi*.

The -*gi* found in *keegi*, *miski*, *millalgi*, *kuski*, and perhaps *mingi* does not have the emphatic meaning of the clitic -*gi*, but has a meaning of *indefiniteness* ('some, any'). There is a formal difference between the emphatic clitic -*gi* and the indefinite morpheme -*gi*. The former is productive, and like a typical clitic, exhibits a low degree of selection with respect to its host (Zwicky and Pullum 1983:503). It can attach to any word class, e.g.

NOUN	naine-gi	'even the woman'
VERB	räägib-ki	'even speaks'
ADJECTIVE	suur-gi	'even large'

This clitic never appears inside case endings and is never found as an endoclitic in compounds.[8]

The latter, however, is not a clitic, but appears to be a derivational affix. It appears with only a few pronominal stems (denoting person, place, time, or type).

keegi 'somebody, someone', cf. *kes* 'who'
kuski 'somewhere, anywhere', cf. *kus* 'where'
miski 'something, anything', cf. *mis* 'what'
millalgi 'at some time, at any time, ever', cf. *millal* 'when, at what time'
(*mingi* 'some, a certain, a kind of' from older genitive of *mis* 'what')

This behavior is typical of affixes, which exhibit a high degree of selection with respect to their stems (Zwicky and Pullum 1983:503).

My claim, then, is that it is only the indefinite -*gi*, not the clitic -*gi*, that appears on the surface "endoclitic", "infixed", or metathesized with the case endings. There is no motivation to posit a rule of morph metathesis, since the generalization that underlies such a rule is restricted to parts of just three paradigms (the optional *miski* and *keegi* forms and the three obligatory *kuski* forms). It is more likely the case that all the forms in question are memorized as wholes--a common situation for pronouns and adverbs.

One may worry about the independent status of this indefinite -*gi*--is it truly a derivational morpheme? There is some evidence to support a polymorphemic analysis of *keegi*, *miski*, *kuski*, and perhaps *millalgi* (but not *mingi* -- see footnote 5). Numerous formal similarities exist between the interrogative pronouns that serve as the etymological sources for these adverbs and the stems which serve as the synchronic stems for the adverbs.

Keegi 'somebody, someone' is formally identical to the interrogative pronoun *kes* 'who' plus the emphatic clitic -*gi*. The first morpheme in *kee-gi* is declined exactly like *kes* (except in the nominative), sharing all the idiosyncracies of that paradigm. For example, *kes* has an irregular genitive *kelle* and irregular partitive *keda*, and so does *keegi*--genitive *kelle-gi* and partitive *keda-gi*.[9] For this reason *kee-gi* is to be analysed as polymorphemic. It is not the case, however, that *keegi* is the same as the interrogative pronoun plus the emphatic clitic (i.e. *kes-ki*), since it has a specialized meaning--'somebody, someone', not *kes-ki* 'even who'. Just as *kes* is lexicalized, with its morphophonological idiosyncracies, so is *keegi*, which shares many of these properties (but not all).

Parallel to *keegi* is *miski* 'something, anything'. This likewise is composed of two morphemes *mis* and -*gi*. The former is to be identified with (but not as) the interrogative pronoun *mis* 'what' because the two are phonologically and morphologically identical. They both have the same morphophonological idiosyncrasies--nominatives ending in -*s*, genitives in -*lle*, partitives in -*da*, short and long forms (both of which are represented in the lexicon--e.g. *millelt* ~ *milt*[10]). That *miski* is not the same as the pronoun plus the emphatic clitic is obvious from the semantics of *miski*: the pronoun-clitic *mis-ki* means 'even what', but the lexicalized *miski* has the specialized meaning 'something, anything'.

That *miski* is a semi-frozen form in the lexicon is further demonstrated by its appearance as the first member of a compound: *miskipärast* ~ *millegipärast* 'for some reason or other'. The emphatic clitic -*gi* even, in combination with *mis* 'what', would never appear endoclitic in compounds or any other word form.

The morpheme *kus* in *kuski* has internal local cases *kuhugi*, *kuski*, and *kustki*, just like the *kus* paradigm. *Kuski* also lacks forms in the nominative, genitive, partitive, translative, essive (see footnote 6), terminative, abessive, and comitative.[11] What the *kuski* paradigm has that is absent in the *kus* paradigm are external local cases. These, however, are attached not to the *ku-* stem, but to a *kus-* ~ *kusa-* stem, with the indefinite -*gi* intervening. This irregularity is apparently memorized, as is the whole defective paradigm. Note, in addition, that *kus* has an emphatic form *kus-ki* 'even where', but this has only superficial similarity to the semantically specialized *kuski* 'somewhere, anywhere'.[12]

None of these paradigms can be generated syntactically from interrogative pronouns and clitic -*gi*. Their meanings are specialized and they have certain morphophonological idiosyncracies that force a special treatment of them in the lexicon. That they are not completely rule governed is seen from the formal irregularities in their respective paradigms (e.g. absence of plural forms and presence of short forms). There is no motivation for a rule of morph metathesis which would apply optionally to parts of two paradigms (*keegi* and *miski*), obligatorily to parts of one paradigm (*kuski*), and would fail to apply at all in parts of the *kuski* paradigm and in millalgi. Thus we are dealing with lexicalized word-forms which are semi-frozen polymorphemic adverbials.

I have argued above that Estonian does not have a synchronic endoclitic -gi in the five adverbials at hand, but I have not yet proven that the "malordering" of -gi in at least some of these forms is not due to endoclisis (or metathesis) at an earlier stage of the language. At this point I shall attempt to outline a diachronic account of the indefinite -gi in which endoclisis (or metathesis or infixation) is not a necessary step in in the history of Estonian. Instead, I claim that analogy is the crucial factor.

Originally the interrogative pronouns combined with the emphatic clitic -*gi* and took on a specialized meaning. The -*gi* apparently changed semantically to indefiniteness and the whole adverbial became lexicalized. All five of these adverbials were frozen. *Millalgi* did not inflect further, thus stranding -*gi* outside the case ending. The *kuski* paradigm is based on the defective *kus* paradigm, which has only internal local cases (inessive, illative, elative). In order to form the external local cases for the *kuski* paradigm, the case endings were attached to the *kuski* ~ *kusagi* stem, stranding the -*gi* morpheme inside the allative, adessive, and ablative case endings.

In *miski* and *keegi*, the nominative, genitive, and partitive are morphemes fused into the stem (not isolable) and could not be separated to be placed on the other side of -*gi*. The rest of the paradigm follows this ordering of case and -*gi*, but also allows the reverse order, due to analogy with the *kuski* external local cases. In other words, *millelgi* ~ *millegil* et al. were subject to analogical pressure from two sources: one is the direct (or non-oblique) set of inflections of the same paradigm; the other is the external local case set from the *kuski* paradigm.

Mingi is frozen and lexicalized to the point that it is no longer analysable as two morphemes. All inflections lie outside the former morpheme -*gi*.

This approach to the origin of the different orderings of indefinite -*gi* and the case endings in the indefinite adverbials makes the claim that there was never a period in the history of Estonian that the clitic -*gi* metathesized with the case ending, The different orderings were a result of analogy. Speakers of the language today have both orders as alternatives as a result of this analogy, and neither ordering can be proven basic in synchronic Estonian.

In this paper I have argued against an endoclitic analysis of Estonian *-gi* on several grounds. First, *keegi*, *miski*, etc. are not semantically relatable to forms having the emphatic clitic coupled with an interrogative pronoun; they are lexicalized adverbs. Second, they must be seen as semi-frozen forms because of certain formal irregularities (absence of plural forms and presence of short forms, among others). Third, the *-gi* that appears in these paradigms has an indefinite meaning, not an emphatic one. Finally, the alternative orderings found in the *keegi* and *miski* paradigms are restricted to just parts of these two paradigms. The generalization that underlies a morph metathesis rule (or any other endoclisis) is very limited indeed. I have proposed instead that all the forms in question are memorized as wholes.

The historical source for this ordering predicament comes from the lexicalization of indefinite *-gi* and the defective *kus* paradigm, followed by the reinflection of *kuski* ~ *kusagi*, which leaves indefinite *-gi* stranded inside the case ending. This defective paradigm has influenced the *miski* and *keegi* paradigms, through analogy, to reverse (optionally) the order of case and *-gi*. The original ordering is still possible due to pressure from the direct, or non-oblique, cases (nominative, genitive, and partitive) which could not "metathesize" because they lack discrete morphemes (i.e. they are fused into the stem).

The tendency, then, is for indefinite *-gi* to migrate closer to the root because it is a derivational affix. As Zwicky (1977:8) says, "we have, transparently, a morphological change in progress, with *-ki* coming to be treated more and more as a suffix attached to the base." The change is nearly complete; the indefinite morpheme *-gi* is a suffix, and is in most instances attached to the base. (In the case of *mingi*, the change is complete--the former morpheme lies inside all inflections and is synchronically unanalysable as a separate morpheme.) This means that Estonian does not have an endoclitic *-gi*, but a derivational affix *-gi*.

Footnotes

*Special thanks go to Ilse Lehiste for acting as an informant and providing additional information, and to Brian Joseph and Arnold Zwicky for reading previous versions and offering helpful suggestions.

[1] *-gi* and *-ki* are orthographic variants: *-ki* is found after voiceless consonants and *-gi* after voiced consonants and vowels. Phonemically there is no difference between the two--both *-gi* and *-ki* have a short /k/ (which is to say quantity one; phonetically voiceless lenis [g] or [G]). Since the letter *g* is normally used to represent this phoneme, I shall refer to this morpheme by the *-gi* variant.

[2] The class of indefinite adverbials includes not only the five examined in the text but also *mingisugune* 'a kind of' (a compound, cf.

mingi 'some, a certain, a kind of'), *ükski* 'even one', and *muu* 'other' (Kask and Palmeos 1965:70). In addition, there is *kumbki* 'either'. Although *kumbki* and *ükski* contain the indefinite -*gi*, neither are discussed in this paper since they are both well formed. Only *kumbki* has a specialized meaning -- compare the interrogative pronoun *kumb* 'which (of two)' in combination with the emphatic clitic -*gi*: *kumbki* 'even which (of two)'. Otherwise these two adverbs are formally equivalent to the pronouns *kumb* and *üks* ('one') plus the emphatic clitic, having case endings between the stem and -*gi*, and allowing all case forms and plurals.

Finally, there are *kuidagi* 'somehow', etymologically related to *kuidas* 'how, in what way' (and possibly also *kuid* 'but, yet'), and *kuigi* 'though, although', etymologically related to *kui* 'when, if'. Neither of these two are synchronically derivable from their respective etymological stems.

[3] The term 'case ending' here refers to the *direct* (or syntactic) *cases* --nominative, genitive, partitive; the *oblique suffixes* -- illative, inessive, elative, allative, adessive, ablative, and translative; and the *bound postpositions*--essive, terminative, abessive, and comitative (see Nevis 1982 for a discussion of these last four case endings). In this paper the bound postpositions are not distinguished from the other oblique suffixes, since the distinction is not relevant here.

[4] I have selected *kuski* as the citation form for this paradigm. There is no nominative case, but the form *kuski* can serve as the stem for the attachment of the external case endings, e.g. allative *kuskile* alongside *kusagile* (with the alternative stem *kusagi*-).

[5] *Mingi* is to be parsed into two morphemes only on etymological grounds. It consists of an older genitive *min* (cf. Finnish *min-kä*) plus the -*gi* morpheme. But the *n*-genitive has long disappeared in Estonian, and where it does appear (e.g. in *maantee* 'highway, road', etymologically *maa-n-tee* lit. land-GEN-path), it is no longer recognized as a genitive. The synchronic genitive of *mis* is not _*min_, but *mille*. *Mingi* is inflected as if it were a single morpheme. It still has the indefinite meaning found in the other indefinite adverbials examined here.

[6] The etymological root *ku*- plus essive -*na* plus "emphatic" is not truly a part of this paradigm for two reasons. First, it has temporal meaning, 'once, at one time, ever', not spatial as the rest of the members of the *kuski* paradigm have. And second, *kunagi* is lexicalized, and as a separate lexicalized item, participates in derivational morphology, e.g. *kunagine* 'former, one time, some time' with the derivational affix -*ne*. Such derivation with other members of this paradigm is ungrammatical, e.g. _*kuskine_.

[7] Klavans (1979) is a response to Zwicky and Pullum's (former) analysis of endoclisis as morph metathesis. She argues that clitics which are members of some major word class can themselves be inflected, and after cliticization, can come to look like endoclitics (i.e. resulting in [HOST[CLITIC-SUFFIX]] or [[PREFIX-CLITIC]HOST]). In her footnote 10, she promises to analyse Estonian -*gi* in her 1980 dissertation. I have not yet been able to locate this information in her dissertation. Nonetheless, -*gi*

is not problematic for her "clitics as words" analysis since it is not a member of an inflectable word class and therefore does not behave like the other examples of endoclitics that Klavans examines. And, as I argue in this paper, the "endoclitic" -*gi* is not even a clitic.

[8] It is doubtful that clitic -*gi* ever appears lexicalized, even in *siiski* 'nevertheless, all the same, still, even then' from *siis* 'then' plus emphatic -*gi*. Note that the meaning 'even then' of *siiski* is not simply 'even at that time, even in that case'.

[9] *Kes* has "short" forms in the adessive and ablative; that is to say, *kel* occurs as an alternative to *kellel*, and *kelt* to *kellelt*. This is only partly true for *keegi*--*kelgi* appears alongside *kellelgi*, but *_keltki_ is not possible as an alternative for *kelleltki*. Some of the *kes* case endings accept plural -*de*-: genitive plural *kelle-de* ~ *kelle*, illative plural *kelle-de-sse* ~ *kelle-sse*, etc. *Keegi*, however, lacks separate plural forms. See Kask and Palmeos (1965) for a description of the long and short forms and see my (1982) CLS paper for arguments that neither is derived from the other--both long and short forms are lexicalized and idiosyncratic (pp. 403-5).

[10] *Miski* has only two short forms, adessive *milgi* (~ *millelgi* ~ *millegil*) and translative *mikski* (~ *millekski* ~ *millegiks*) according to Kask and Palmeos (1965:75). The pronoun *mis* 'what' also has (optional) plural forms for most case endings (e.g. genitive plural *millede* ~ *mille*, illative plural *milledesse* ~ *millesse*) which are lacking in *miski* (Kask and Palmeos 1965:63, 75).

[11] Arnold Zwicky has suggested that the *kus* paradigm need not be entirely lexicalized. The gaps that appear are for the most part semantic --*kus* 'where', *kust* 'whence', and *kuhu* 'whither' are locative (or directional) in meaning (the stem *ku*- refers to location). Absence of nominative, genitive, partitive, translative, essive, abessive, and comitative cases in this paradigm is then to be expected on semantic grounds. They do not express location or direction. The absence of external local cases is not necessarily expected, however, nor is the gap in the terminative. For the latter, one would expect *kuni*, a form that exists, but only in temporal meaning (and not locative). That *kuni* 'until, up to' is lexicalized and separate from the *kus* paradigm is clear from its further inflection: *kuni-ks* 'up to when, up to what time' is the translative of *kuni*. Estonian never productively strings sequences of case endings together, so an analysis of *kuniks* as *ku-ni-ks* (ku-TERM-TRANSL) is ruled out and *kuni* is to be viewed as a single morpheme. The same holds for the terminative of *kuni*, *kunini* 'until, up to'.

In the *kus* paradigm, however, the gap in the locative *_kuni_ (in the sense of 'up to where') is unexpected. For two reasons, then, I claim that the *kus* paradigm is lexicalized and defective: the absence of the external local cases and the absence of the terminative (i.e. locative *kuni*). These two gaps are apparently arbitrary and not ruled out on semantic grounds as are the other gaps in the paradigm.

[12] The absence of external local cases in this defective paradigm results in partial agreement in phrases like kus kohal 'in what place, where' (in which kus is inessive and kohal is the adessive of koht 'place') and kust kohalt 'from what place, from where' (in which kust is elative and kohalt ablative). These two phrases agree in directionality. Similarly one finds kuspool 'on which side, where, in what direction' with inessive kus and adessive pool, and also kuhupoole having illative kuhu and allative poole.

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Clitics and Particles*

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Abstract

Typological and theoretical speculations about clitics require that clitic be adequately distinguished from inflectional affix on the one side and from independent word on the other. The first of these tasks has been attended to, but the second has been slighted, with the result that many items labeled as 'particles' have been treated as clitics.

After some remarks on what 'tests' are in linguistics, a series of tests is provided for distinguishing clitics from independent words. On the basis of these, it is concluded that most of the 'particles' in the literature are simply words, and from this conclusion it is argued that treating words with idiosyncratic distributions as acategorial 'particles' is wrong.

The relevance of various cases of 'particles'--in German, Chrau, Hidatsa, and Welsh--to theoretical proposals about special clitics is then considered. The examples include particles that are really independent words, particles that are really inflectional affixes, and particles that are really independent words with simple clitic variants.

Finally, a true class of (discourse) particles is delineated--a grammatical category having little to do with most of the particles in the literature.

0. Initial remarks

The recent flurry of work on clitics--especially the description of clitic systems in various languages and the examination of the status of clitics in a general theory of language structure--has made the task of distinguishing clitics from (on the one hand) affixes and (on the other) independent words an especially pressing piece of business for linguists.

One of the main reasons linguists are interested in the clitic systems of individual languages is that they hope to use data from a variety of languages to formulate inductive generalizations about language, in particular inductive generalizations that might be useful in typological studies. Obviously, if such generalizations are to have any value, the phenomena on which they are based must involve cliticization and not ordinary morphology or ordinary syntax.

The same is true for investigations in which theory construction is the chief goal: there is not much point in proposing that cliticization is an ordinary syntactic operation (describable by the same formalism as ordinary syntactic rules and capable of interacting with them), or that it is a type of affixation (describable by the same formalism as ordinary inflectional affixation and interacting with other morphological rules but not with ordinary syntactic rules), or that it is a special type of rule (subject to its own formal constraints and interacting with other types so as to operate on the output of syntactic rules as a group and to provide the input for morphological rules as a group), so long as the evidence for this theoretical position involves linguistic units whose status as affixes, clitics, or words is unclear.

A few remarks on recent history are in order here. My early investigation of clitics (Zwicky 1977b) was pretheoretical in nature and did not address these issues seriously. Klavans 1982 took the position that clitics are to be distinguished in linguistic theory from affixes and words (so that _clitic_ is a theoretical construct and not merely a useful pretheoretical cover term), but she supplied little in the way of tests to distinguish clitics from other units. Given what I said above, such tests are very important, if the theoretical enterprise is to advance. Zwicky and Pullum 1983a was an attempt to pull together a list of tests for one side of the clitichood question, the differentiation of clitics from affixes.

There is, unfortunately, no comparable summary treatment of the other side of the question, the differentiation of clitics from independent words. Certainly the matter isn't clear; language descriptions abound with references to 'particles' whose classification as clitics or words or something else is not at all obvious. As it happens, the recent literature on clitics is very much inclined to assume that anything labelled as a 'particle' is a clitic, so that a basic unclarity is carried through from the original language descriptions (where these fundamental conceptual distinctions are not the focus) to general surveys like Zwicky 1977b and to theoretical proposals and typological speculations like those in Kaisse 1982 (in this context the conceptual distinctions are crucial).

My purposes in this article are, first, to remark on what is to be meant by _test_ in contexts like this one; second, to provide a tentative list of tests that might be used in an attempt to distinguish clitics from independent words; third, to remark that on these tests most of the things that have been labelled 'particles' are not clitics, but rather separate words, or inflectional affixes, or separate words with clitic variants; and finally, to point an extra moral, namely that (so far as I can see) 'particle' is a pretheoretical notion that has no translation into a theoretical construct of linguistics and must be eliminated in favor of such constructs.

1. _'Tests' in linguistics_

It would be easy to mistake the nature of familiar tests for membership in a syntactic category, application of a particular syntactic transformation, classification as a word or affix, and the like. The temptation is to see these tests as necessary and sufficient conditions for the applicability of a theoretical term, that is, as _definitions_ of the term. But what is normally intended when such tests are appealed to is more analogous to medical diagnosis than to operations using an axiomatic system. The tests point to characteristic _symptoms_ of a linguistic state of affairs, not to invariant concomitants of it.[1]

Thus, the tests listed by Zwicky and Pullum 1983a ('clitics can exhibit a low degree of selection with respect to their hosts, while affixes exhibit a high degree of selection with respect to their stems', 'arbitrary gaps in the set of combinations are more characteristic of affixed words than clitic groups', and so on) are mostly stated in terms of tendencies, and the inferences they suggest work in one direction only: if you're looking at an affix, it probably exhibits a high degree of selection; if there are arbitrary gaps in the set of combinations, you're probably looking at an affix. The tests are useful (when they are) because they work in most clear cases--indubitable affixes usually do exhibit a high degree of selection with respect to their stems (and so do some, but not all, indubitable clitics), and there are rarely arbitrary gaps in the set of indubitable clitic groups. However, as in medical diagnosis, interfering factors can cause even clear cases not to exhibit some symptom, and a particular symptom might result from some condition other than the one at issue.

Note that a test can be useful even when its basis is poorly understood. Sometimes, of course, tests follow from theoretical assumptions, but their utility is independent of these assumptions. To see this, consider the two tests in Zwicky and Pullum 1983a that are stated absolutely and bidirectionally: 'syntactic rules can affect affixed words, but cannot affict clitic groups' and 'clitics can attach to material already containing clitics, but affixes cannot'. These two tests follow from the theoretical assumption that no syntactic operations (including those of government and agreement) can follow cliticization operations, but even those who do not share this assumption are entitled to use in their argumentation the fact that a word-like unit affected by a syntactic operation is usually (if not necessarily) an affixed word, and also the fact that an affix-like unit attached to material already containing a clitic is usually (if not necessarily) itself a clitic.

Wherever possible, of course, we should seek a rationale for tests (and I attempt to do this for the tests in the following section), but on occasion we must proceed in a state of imperfect understanding about why the tests work as they do.

2. Distinguishing clitics and words

I now turn to a series of pretheoretical and theoretical observations about affixes, clitics, words, and phrases, all leading to tests that might, in favorable circumstances, distinguish between clitics and words. The tests all depend on the general observations that when contrasted with independent words, clitics have some of the properties of affixes (especially inflectional affixes), and that when contrasted with clitics, words have some of the properties of syntactic phrases.

2.1. Phonological tests

The first relevant observation about clitics is that they form a phonological unit with an independent word.[2] However, some non-clitic words also form phonological units with words adjacent to them: English prepositions with the noun phrases following them, for instance. The difference between the clitic + word and word + word cases is the difference between phonological words and phonological phrases.

2.1.1. Internal/external sandhi

What the foregoing means is, at least, that phonological rules specifically of 'internal sandhi' apply only within phonological words, whereas phonological rules specifically of 'external sandhi' apply only between phonological words and not within them. Consequently, an element affected by or conditioning a sandhi rule otherwise known to be internal ought to be a clitic rather than an independent word. And an element affected by or conditioning a sandhi rule otherwise known to be external ought to be an independent word rather than a clitic.

2.1.2. Word/phrase domains in prosodic phonology

Rules of sandhi affect segmental features. But rules of prosodic phonology--rules assigning accent, tone, or length--can also be sensitive to the distinction between phonological words and phonological phrases, in that the domain within which a prosodic feature is distributed can be either the phonological word or the phonological phrase (or some other prosodic unit, like the syllable). Consequently, if an element counts as belonging to a phonological word for the purposes of accent, tone, or length assignment, then it ought to be a clitic rather than a word on its own. And if an element counts as belonging to a phonological phrase for these purposes, it ought to be an independent word rather than a clitic.

2.1.3. Word/phrase domains in segmental phonology

Finally, there are phonological rules--rules of vowel harmony are familiar examples--which affect segmental features but which nevertheless are 'prosodic' in character, since their domains of applicability are prosodic units. If an element counts as belonging to a phonological word for the purposes of such rules, then it ought to be a clitic rather than a word on its own. And if an element counts as belonging to a phonological phrase for these purposes, it ought to be an independent word rather than a clitic.

2.2. An accentual test

Clitics are accentually dependent, while full words are accentually independent. That is, an element that does not bear an accent of its own is probably a clitic, whereas an element that can bear the accent in its phrase or sentence is almost surely a word. (In a few cases, analysts have opted for an ad hoc labeling of certain items, which would otherwise have been classified as clitics, on the grounds that they are not necessarily stressless; so Speiser 1941: 166-7 introduces the term associative and

Derbyshire 1979: 35 calls on the ubiquitous *particle*.)

This accentual test is probably the most popular rule-of-thumb for distinguishing clitics from independent words, but it is a most unreliable test and should never, I think, be used as the sole, or even major, criterion for a classification, though it can support a classification established on other criteria. There are two problems with the accentual test, one minor and one major. The minor problem is that some languages do permit clitics to be accented in certain circumstances; Klavans 1982: sec. 5 surveys cases in which clitics get accent through the operation of general accentual rules or for emphasis or contrast. The major problem is that many clearly independent words, like the prepositions, determiners, and auxiliary verbs of English, normally occur without phrasal accent (such words are called *leaners* in Zwicky 1982).

2.3. Tests using similarities between clitics and inflectional affixes

In contrast to independent words, clitics are affix-like; indeed, they resemble inflectional affixes. At least six tests exploit this difference.

2.3.1. Binding

We expect bound elements to be affixes, free elements to constitute independent words. Correspondingly, if we are trying to decide whether some element is a clitic or a word: If it is bound it ought to be a clitic, if free an independent word.

2.3.2. Closure

Typically, certain inflectional affixes 'close off' words to further affixation. Correspondingly, an element that closes off combinations to affixation, or indeed to cliticization, ought to be a clitic rather than an independent word.

2.3.3. Construction

Inflectional affixes combine with stems or full words, whereas words combine with other words or with phrases. Consequently, we expect that an element whose distribution is correctly stated in terms of its ability to combine with single words is a clitic, and also that an element whose distribution is correcty stated in terms of its ability to combine with (potentially) multi-word phrases is a full word. The first of these expectations is strongly supported, but the second is more complex, because some indubitable clitics do combine with multi-word phrases (in the clearest cases, the items in question are clitics on all the relevant phonological and accentual tests).

2.3.4. Ordering

Alternative orders of morphemes within a word are associated with differences in cognitive meaning, while alternative orders of words within phrases are commonplace (they are 'stylistic', conveying the same cognitive meaning). Consequently, an element that is strictly ordered with respect to adjacent morphemes is almost surely a clitic (or an affix), while an element exhibiting free order with respect to adjacent words is certainly an independent word. Again, there is some complexity here, since clitics on occasion exhibit some freedom of order with respect to one another (this is the case for the Tagalog clitics; see Schachter and Otanes 1972: sec. 6.2), though not normally with respect to their hosts.

2.3.5. Distribution

Affixes typically have a single principle governing their distribution; English -*ness* combines with adjectives, -*ing* with verbs. Words rarely have distributions that can be described in a single principle; the combinatory possibilities for a verb like *watch* are numerous. Clear cases of clitics typically behave like affixes in this respect, having distributions describable by single principles like 'combines with the head verb of a clause', 'combines with the first constituent of a clause', 'combines with the first word of a clause', or 'combines with a noun phrase'. It follows that an element with a simple distribution of this sort is probably a clitic (or an affix), and that an element with a complex distribution is almost surely an independent word.

2.3.6. Complexity

Affixes are usually not morphologically complex themselves, whereas words frequently are. Clitics again behave like affixes (though Klavans has suggested in her work that inflected clitics do occur). Consequently, a morphologically complex item is probably an independent word rather than a clitic.

2.4. Syntactic tests

A word can serve as a syntactic constituent, and therefore can be subject to syntactic processes; a clitic, however, is only a proper part of a word-like construct, and should be immune to such processes. From this fact we can obtain several tests that differentiate between word + clitic combinations and word + word combinations. In what follows I will use the terminology of transformational syntax, though the tests can easily be translated into other frameworks.

2.4.1. Deletion

Proper parts of words are not subject to deletion under identity; whole words may (in the appropriate circumstances) undergo such deletions.

Proper parts of word+clitic combinations are equally immune to deletion. It follows that if either X or Y in an X+Y combination is deletable under identity, then X and Y are words; neither of them is a clitic.

(Note that I refer here only to deletion under identity. So-called free deletion is quite another matter, and items that are unquestionably clitics can be subject to a type of 'deletion' that does not involve an anaphoric linkage between the victim and some other constituent in its sentence. Zwicky and Pullum (1983b) have argued that some free deletions are simply examples of zero allomorphy, not syntactic phenomena at all, and they speculate that all such 'deletions' are really morphological. The main case they consider involves, in fact, a set of clitics--English proclitic auxiliaries, which are deletable in casual style in examples like You seen Jerry? (cf. 'V you seen Jerry?).)

2.4.2. Replacement

Proper parts of words are not subject to replacement by a pro-form under identity; whole words may (in the proper circumstances) be subject to such replacement. Proper parts of word+clitic combinations are equally immune to replacement. It follows that if either X or Y in an X+Y combination is replaceable by a pro-form, then X and Y are words; neither of them is a clitic.

2.4.3. Movement

Proper parts of words are not subject to 'movement rules', that is, they cannot serve as gaps in gap-filler relations with other constituents in a sentence. Full words may (in the appropriate circumstances) participate in such relations. Proper parts of word+clitic combinations are equally unavailable for movement. It follows that if either X or Y in an X+Y combination can be moved without the other, then X and Y are words; neither of them is a clitic.

2.5. A test derived from interface assumptions

Given the proposal that cliticization occurs in a component ordered after syntactic rules apply, it follows that a clitic group--a combination of a host word with its clitics--should not be available when syntactic rules apply (except in the case where the clitic is simply a reduced form of an independent word that makes a phrase with its host).

As a result, if a syntactic rule must mention a combination X+Y containing a 'dependent' item Y--either because X+Y is deleted under identity, because it is replaced, or because it is moved, or even because it must be mentioned as a conditioning factor in a rule affecting other constituents--we should expect that Y is an independent word, and not a clitic (or an affix). Conversely, if X+Y makes some sort of unit, but never requires mention in a syntactic rule, we should expect that Y is a clitic.

2.6. A metaconsideration

As a final, somewhat speculative, point in this enumeration of criteria distinguishing clitics from words, I suggest the following metacriterion: In the absence of clear evidence classifying an item one way or the other, assume that the item is a word (or an affix) rather than a clitic.

The implied claim here is one about the general human ability for language, that clitics are more marked than either inflectional affixes or independent syntactic units (that is, words). Since inflectional morphology is clearly more marked than syntax--there are many pretty-thoroughly-isolating languages, but no almost-totally-synthetic languages (despite the evidence of languages like Eskimo)--the consequence of this claim is that, ceteris paribus, an item whose standing is unclear is most likely to be an independent word, next most likely to be an inflectional affix, and least likely to be a clitic.

Though I take this metaconsideration seriously, in what follows I will not assume that it is a reliable guide. Nevertheless, I should point out that the argumentation of section 4 below would be a good bit shorter for anyone who assumes that cliticization is more marked than either inflectional affixation or syntactic combination.

3. Particles

The term _particle_ is a ubiquitous one in syntax. Its most common function is to label items which, in contrast to those in established word classes of a language, have (a) peculiar semantics and (b) idiosyncratic distributions. _Particle_ is consequently a cover term for items that do not fit easily into syntactic and semantic generalizations about the language.

On occasion--as in Bloomfield's 1917 analysis of Tagalog--the word is used to cover any lexical item not in a major word class; in Tagalog the list of such items incudes both true clitics, which Bloomfield calls 'enclitic particles', and a large number of nonclitic words. Especially in older works (like Whitney 1889 on Sanskrit) the word covers any indeclinable, or uninflectable, item; this use of the word is particularly common for languages, like Sanskrit, in which almost all words have inflected forms. A middle course is steered by those who follow Crystal (1980: 258) in distinguishing as a particle 'an _invariable item_ with grammatical _function_, especially one which does not readily fit into a standard description of _parts of speech_'.

3.1. Properties of 'particles'

The familiar class Prt of verbal 'particles' in English--the _off_ of _send off_, the _up_ of _give up_--is a typical set of words that get this label because no other suitable label is available. They are, first of all, semantically peculiar: their contribution to the combinations in which they occur tends to be idiosyncratic, and in any case this contribution is not that of either of the two closest word classes in English, prepositions and (directional) adverbs. In addition, the English 'particles' are odd on distributional grounds; they have neither the distribution of prepositions (since they occur postnominally, as in *Robin gave the theory up*) nor the distribution of adverbs (since they occur between a verb and its direct object, as in *Robin gave up the theory*).

Elsewhere in English, one might want to label some roughly adverbial words like *even*, *only*, and *not* as particles; similarly, the infinitive marker *to* is a candidate for this label. In other languages, extraordinary collections of words have been assigned to a particle category--markers of mood and sentence type, honorifics, indicators of topic and focus, case markers, tense/aspect morphemes, markers of emphasis, subordinators, coordinators, indicators of direct vs. indirect discourse, negators, vocative markers, deictics, definiteness/indefiniteness markers, classifiers, and so on. That is to say, the range of meanings for the things that have been called 'particles' in one language or another parallels exactly the range of meanings for clitics in the languages of the world, and these in turn parallel exactly the range of meanings for inflectional affixes in the world's languages. Semantically, items classified as particles are 'function', rather than 'content', items; the words most likely to be so classified are those with the least content--on the one hand, apparently meaningless concomitants of syntactic constructions like the infinitive marker *to* in English, and on the other, the little words like German *doch* and *noch* that are the bane of lexicographers and grammarians alike because it is so hard to specify their menaings or their functions, despite the fact that they clearly contribute something to the sentences in which they occur.

Phonologically, the things labeled as particles tend to be 'dependent', again like clitics and affixes. Some particles, like the English infinitival *to*, cannot occur in isolation. Most of them are normally subordinate in accent to words from other word classes, and so do not usually bear phrasal accent (here the English verbal particles, Prt, are atypical, for they are usually stressed).

This is not impressive list of general properties of the things that have been called particles. The peculiar semantics and idiosyncratic syntax of particles together make an entirely negative characterization of the set; the English 'particles' *to*, *off*, and *only*, for instance, share no interesting syntactic or semantic properties. The list of meanings conveyed by particles merely groups them together with affixes, clitics, and some indubitably independent words (including, in English, prepositions, determiners, and auxiliary verbs)--as function rather than content items. And their typical lack of phrasal accent merely groups them again with these other function items.

3.2. Particles as words

It should now be clear from what I have said about typical particles that they are in fact words rather than clitics.

First, they all can combine with phrases rather than words (the construction test, section 2.3.3). The English verbal particles combine with a lexical category, V, and a phrasal category, NP, in examples like *send [the astronauts] off* and *see [the horrid task] through*. The infinitive marker combines with VPs, as in *to [boldly go where no man has gone before]*. The adverbial particles *not*, *only*, and *even* combine with all sorts of phrasal categories, as in *not [because I asked you]*, *only [with a pick-axe]*, and *even [the bravest of us]*.

Some of these particles also exhibit a certain amount of freedom in word order (the ordering test, section 2.3.4). In particular, *even* and *only* modifying a phrase within a VP can occur either with its phrase or at the beginning of the VP: *even saw Adeline* shares one of its readings with *saw even Adeline*, and *only took a drop* shares one of its readings with *took only a drop*.

All of these English particles except *to* can occur as independent words (the binding test, section 2.3.1).

The infinitive marker *to* is itself subject to deletion (the deletion test, section 2.4.1)--as in *to teach and (to) learn*--and the material it combines with is subject both to deletion--*I urged him to (have the penguin stuffed)*--to replacement by a pro-form (the replacement test, section 2.4.2)--*I urged him to do so*. Both sets of facts indicate that the combination of *to* with other material does not behave like a word syntactically.

Although most of the English particles I have been discussing are accentually 'dependent', they all can bear phrasal accent (test 2.2), hence behave like independent words rather than clitics. Note examples like *I don't want TO go*, *I will NOT eat that rat tart*, and *She sacrificed EVEN her kangaroo*.

The phonological tests in section 2.1 above are not easy to apply to the current cases. One possibly relevant observation concerns the infinitive marker *to* and the rules governing the aspiration of voiceless stops in English. One context for aspiration is the beginning of a (phonological) word. If *to* were a proclitic rather than an independent word, then we would expect no aspiration at the beginning of *perpetuate* in *to perpetuate*. The presence of aspiration there supports other evidence that *to* is not a clitic.

Although my discussion in this section has concerned English entirely, corresponding evidence can be provided for *noch* and *doch* in German, the negator *hindi* in Tagalog, and many other examples of particles. I conclude that though there *are* clitics in many languages, most of the things that have been labeled as particles are in fact independent words rather than clitics.

3.3. *'Particles' and syntactic categories*

Up to this point, I have been treating *particle* as if it were a theoretical term, parallel to *word*, *clitic*, and *affix* (admittedly, I have been inclined to put the word *particle* in quotes). But there is no reason whatsoever to think that the class of particles in any languge constitutes a unified group of items. And there is certainly no reason to think that particles make a coherent set cross-linguistically. Particles are distinguished entirely *negatively*: they are the items left over when all the others have been assigned to syntactic categories, or the items that do not belong to major word classes, or the items that do not take inflectional affixes.

3.3.1. Acategorial items

One way to capture this fact is to say that particles belong to *no* syntactic category, that they are acategorial. This is equivalent to saying that these words are directly introduced by syntactic rules, rather than appearing as instances of lexical categories. An acategorial account of English *only* would introduce it via rules like the following:

NP ---> (*only*) Det Nom

VP ---> (*only*) V (NP) (NP) (PP)

PP ---> (*only*) Prep NP

The alternative is to assign *only* (and perhaps a few other particles) to a small subclass of adverbs, call it 'AdvX', introduced by rules like the following:

NP ---> (AdvX) Det Nom

NP ---> (AdvX) V (NP) (NP) (PP)

PP ---> (AdvX) Prep NP

As Pullum (1982) points out in his discussion of one English particle, the infinitive marker *to*, acategorial accounts have been proposed for a very large number of words in English--in Chomsky 1957 and Burt 1971 alone, for infinitival *to*, the conjunctions *and* and *or*; certain occurrences of the prepositions *of*, *by*, and *for*; the complementizer *that*; the auxiliary verbs *do*, *have*, and *be*; the expletive pronoun *there*; and the degree modifiers *very* and *so*--as well as for several affixes (among them, perfect -*en*, progressive -*ing*, and negative *n't*) and at least one clitic (possessive -*'s*).

3.3.2. Problems with acategoriality

Pullum (1982: 182) observes that there are two reasons to object to the availability of acategorial descriptions: 'it introduces irreducibly parochial (language-particular) elements into the syntactic rules of the language instead of assigning them to the natural repository for such parochiality, the lexicon' and 'it formalizes a distinction between words in a language [the distinction between categorial and acategorial words] for which there is absolutely no warrant in terms of the intuition of the native speaker'.

The first objection is important to anyone who wants to propose substantive universal generalizations about phrase structure rules. The second objection is that there is no psychological reality to the distinction between categorial and acategorial words. There are at least two further objections.

First, not only is there no apparent psychological reality to the distinction between categorial and acategorial words, there seems to be no grammatical reality to it, either. That is, there seem to be no grammatical generalizations that are correctly stated in terms of this distinction. I noted above that the set of particles in a language do not hang together in any grammatically interesting way; this is equivalent to saying that acategorial words form no grammatically interesting class.

Second, lumping acategorial words into a class predicts not only that there should be generalizations over this class (which I have just denied), but also that there should *not* be any generalizations relating individual acategorial words to other syntactic categories. Indeed, the apparent lack of such generalizations is what causes particular words to be treated acategorially. However, several such generalizations have been found: Emonds 1972 uses generalizations connecting the English verbal particles to prepositions to argue that the particles should be analyzed as (intransitive) prepositions, and Pullum 1982 uses generalizations connecting infinitival *to* to auxiliary verbs to argue that *to* should be analyzed as an auxiliary verb (admittedly a rather special and defective one). It is a feature of such works that the generalizations are by no means obvious or easy to discover. But the fact that they have been found in some cases encourages me to think that generalizations linking individual particles to syntactic categories can be found in other cases as well.

3.3.3. *No acategorial words!*

As a result, I propose that *there are no acategorial words*; that is, stated positively, *every word (in every language) belongs to one of the syntactic categories provided by (universal) grammatical theory*.

Clitics and inflectional affixes are acategorial, on this proposal, but every word must be assignable to a syntactic category. Still another way of stating the proposal: *there are no particles*--*only syntactic categories, clitics, and inflectional affixes*.

I should add here that in proposing this I am presuming an elaborated theory of syntactic categories. What is required, as Gazdar and Pullum (1982: 1-3, citing earlier works in a variety of theoretical frameworks) have pointed out, is both a hierarchical arrangement of subcategories within categories (so that the English infinitive marker *to* can be treated as a singleton subclass of the class of auxiliaries, itself a subclass of a class of verbs, itself a subclass of a class of predicators that includes both verbs and adjectives) and also the ability to refer to 'natural classes' of categories that cross-cut one another (the ability, for instance, to refer to adjectives and verbs together as a class, and also to refer to adjectives and nouns together as a class). The required theory of syntactic categories is therefore parallel in its form to the theory of distinctive features in phonology. Its most salient feature here is that it permits reference to a large number of word classes--of all sizes from a single word to thousands, with some classes included within others, and with some classes intersecting with others.

3.3.4. An alternative

The proposal I have just made appears to run directly counter to ideas presented by Carlson (1983). In this section I will argue that the two are compatible, and in so doing I will sharpen somewhat my own proposal.

Carlson's discussion begins with the observation that in language in general 'there are two distinct types of morphemes...variously referred to as lexical vs. function morphemes, full words vs. empty words, content words vs. particles' (69). Carlson takes this distinction to be a fundamental one in linguistic theory, and argues that particle words group together with inflectional affixes, indeed with certain instances of morphological operations like reduplication, with certain clitics, with some suprasegmental marks like intonation contours, with some null elements, and even with instances of altered word order. A telling case is that of yes-no questions across languages; they are marked by particle words, by verbal inflections, by clitics, by intonation or other suprasegmental means, and by word order changes (like inversion in English)--in some languages by two or more of these in concert or in alternation.

The suggestion Carlson ultimately makes is that particle words and their ilk are in fact both meaningless and not lexical items at all. Instead, a particle or one of its kin is a mark of a syntactic combination, a concomitant of a rule that combines lexical or phrasal material; according to Carlson, the meaning apparently associated with some such items is actually a semantic operation associated with the rule.

My proposal requires only that a particle word be assigned to a syntacic category. It does not require that the particle be listed in the lexicon (assuming that the lexicon is conceived as the list of open-class items), or even that it have a meaning common to all of its occurrences. The main reason particles should belong to a syntactic category is that generalizations should be statable across classes of particles, across classes containing both particles and indubitable lexical items, and even across classes comprising occurrences of the 'same' particle introduced by different rules. For this purpose, it would be sufficient for material introduced as a concomitant of a syntactic rule to have some internal feature organization of a nonphonological sort (and indeed we wouldn't want it to have internal phonological organization, for then phonological features would be available to condition or constrain syntactic operations). This material would not have to have a 'meaning', and it certainly is not necessary that this material be a member of an open class.

For this proposal to work, we must assume a distinction similar to one that has repeatedly been suggested in transformational grammar, between an 'early' accessing of the lexicon (for open-class items) and a 'late' accessing (for function morphemes and words), though there is no need to treat the insertion of open-class items as early in derivations. What we require is a distinction between the lexicon proper--a list in which bundles of morphosyntactic features are matched with phonological content and meaning--and a process of shape assignment, in which bundles of morphosyntactic features (associated with words or phrases) receive phonological shapes, whether as segmental material, as an operation on segmental material, or as prosodic features.

I conclude that a Carlson-style treatment of particles is indeed compatible with the claim that there are no acategorial words, so long as material introduced as an accompaniment to a syntactic rule can be internally complex.

3.4. 'Particles' and a typological generalization

I return now to the issue with which this paper began, namely the involvement of particles in general hypotheses about langauge, in particular typological generalizations. I want to treat one hypothesized generalization in particular: Kaisse's proposal (1982: 4) that 'All languages with S' clitics place those clitics in second position, after the first stressed constituent (or word) of the clause, regardless of the category of that constituent (or word).

My aim here is not to defend or attack this proposal--I am inclined to believe that the strongest form in which it can be maintained is limited to free-word-order languages, and I am not committed even to that version--but rather to point out that most of the problematic cases adduced by Kaisse are irrelevant to the hypothesis, since they do not involve clitics, but rather (i) 'particles' that turn out to be independent words, (ii) 'particles' that turn out to be affixes, or (iii) 'particles' that turn out to be simple-clitic variahts of independent words (simple clitics are those, like the English auxiliary clitics 's, 'd, and so on, that serve as reduced forms occurring in the same positions as corresponding full forms--in my English example, the full forms is/has, would/had, and so on).

To elucidate Kaisse's version of Wackernagel's Law, I must first explain that S' clitics are a subtype of special clitics (clitics not partaking of the distribution of corresponding full forms) functioning as constituents of S'--that is, as modifiers of S. Special clitics marking mood, tense, and aspect are typical S' clitics, and special clitics marking subject pronouns are typical examples of S, rather than S', clitics in Kaisse's scheme.

It follows from the statement of Kaisse's generalization that any of the following would be counterexamples to it:

--S' clitics in initial position;

--S' clitics in a medial position other than 2P--for instance, in third position;

--S' clitics located with respect to the end of a clause, either in final position or in penultimate position.

Kaisse herself is careful to bring forward cases that seem to be counterexamples, or at least problematic. These include

--initial S' clitics in Welsh;

--third-position S' clitics in German;

--final S' clitics in Chrau and Kenyang (to which I can add a similar case in Hidatsa); and penultimate S' clitics in Nganhcara.

I cannot consider all of these cases here--to begin with, I lack the information I would need to judge the Kenyang case--but I can consider representative phenomena: independent words rather than clitics (German, Chrau); affixes rather than clitics (Hidatsa); and simple-clitic alternants of independent words rather than special clitics (Welsh). These are examined, in order, in the next section.

4. Items misclassified as special clitics

4.1. Independent words rather than clitics

The burden of most of the preceding discussion has been that many items that might be classified as (special) clitics are in fact just independent words.

4.1.1. German conversational particles

One case I have already alluded to: the German 'conversational particles' *ja* 'indeed', *eben* 'just', *denn* 'for', *doch* 'yet', and *wohl* 'indeed'. As Kaisse (1982: 9) observes, most of these particles are capable of receiving stress, a property 'more characteristic of independent grammatical words than of the special clitics'.

Several of the conversational particles can even occur in isolation, or in combination with other 'little words': *doch* constitutes by itself a positive answer to a negative question (*Verstehst du das nicht? Doch.* 'Don't you understand that? Yes, I do.'), and *ja doch* and *nicht doch* serve as emphatic positive and negative answers, respectively; *wohl* alone is an exclamatory 'Well then!' or a military "Aye, aye', and *ja wohl* and *nicht wohl* are an emphatic positive and an emphatic negative, respectively; *eben* alone is an exclamatory 'Exactly! That's right!'. If the conversational particle *ja* is to be identified with the answer-word *ja*, then it should be added to this list, and it probably should be added in any case, given its exclamatory use in examples like *Ja, ist er gegangen?* 'Why, has he gone?' In any event, the binding test (section 2.3.1) indicates that most of the conversational particles (*denn* is the conspicuous exception) are independent words rather than clitics.

It is also true that the conversational particles are by no means restricted to second position, that is, to position after the first constituent of a clause. *Ja*, *wohl*, and *eben*, at least, occur phrase-initially as well, in examples like *Hunderte--ja Tausende* 'Hundreds--indeed/even/nay thousands', *Wohl zehnmal* 'Indeed/easily/at least ten times', and *Eben an der Stelle* 'Just on that spot'. That is, the conversational particles (again with the notable exception of *denn*) have the distributional properties (section 2.3.5) of independent words rather than clitics.

The reason that the conversational particles appear to be problematic for Kaisse is that in main clauses, where German requires that verbs take second position, the conversational particles appear in third position:

Peter war ja doch dort.
Peter was indeed yet there

**Peter ja war doch dort.*

**Peter ja doch war dort.*

cf: ...*weil Peter ja doch dort war*
'because Peter was indeed yet there'

There is, of course, no problem if the conversational particles are adverbs of a special type. Then their privileges of occurrence are matters of syntax--interesting, but of no particular significance for generalizations about clitics.

Everything I know about the German conversational particles indicates that they are adverbs with special restrictions on their occurrence--in this respect, much like English *not*, though of course with rather different distributional restrictions from those on *not*.

4.1.2. *Chrau particles*

The Mon-Khmer language Chrau, as described by Thomas (1971), presents a picture of incredible diversity in its particles.

Thomas' analysis of this SVO language distinguishes *nuclear* slots in a clause, filled by verbs and their nominal arguments, from *peripheral* slots, filled primarily by various types of 'particles'. Among the particle types is a category of 'adverbs', which are by distributional definition 'words which usually follow the object, but which can freely precede the object' (81) and which have meanings comparable to those of adverbs in familiar languages. But the class of particles also includes a set of 'initial adverbials', ideophonic adjuncts to specific verbs, though located before the subject; a set of 'movable particles', of idiosyncratic distributions, which combine with a variety of constituent types; and a set of 'final particles', the most common of which is *en* 'already, now, finished' (Thomas, 100). The peripheral slots in a clause include several that are clearly phrasal, in particular a set of 'clause temporals' (time adverbials) and a set of 'location' elements (prepositional phrases of location).

Other particles are located at the beginning of the verb phrase constituent in Chrau. These 'preverbal particles' are adverbial in meaning, marking negation and temporal relations.

Still more types of particles occur in main clauses only. These include a set of 'initial particles', some modal in meaning (*chǎc* 'surely, probably'), most functioning as sentence connectives (*ncai* 'then, after that'; *te ra* 'so that, as a result'); a set of 'modal particles', intervening between the clause temporal and the subject, or occurring after the subject, and again performing both modal (*đăng gal* 'truly, indeed') and connective (*chĕq* 'so as a result, then, in that case') functions; and a collection of 'final particles' beyond those that can occur in both main and embedded clauses. These final particles mark questions of various types, imperatives of various types, emphatic assertion and denial, and bewilderment or surprise. It is these particles, mentioned in Zwicky 1977, that appear to constitute an exception to Kaisse's version of Wackernagel's Law--*if* they are clitics. The initial particles would also constitute straightforward exceptions--again, *if* they are clitics.

But there is no reason to think the final and initial particles are anything other than words, adverbs in fact.

Chrau is largely monosyllabic, and the particles all maintain their phonological integrity; there is no evidence that they coalesce with neighboring morphemes. Chrau accent is a matter of high pitch, usually on the final syllable in a sentence, and it is true that final particles like the emphatic negative *nôq* and the mild emphatic *vu de* have inherent low pitch (Thomas, 60f.). However, a number of other morphemes (*di* 'in order to, until', and the sentence and noun phrase coordinators) have inherent low pitch even though they are not final particles--and, in any case, usually neutral or de-emphasized words in a sentence can receive high pitch for special emphasis. Phonologically, then, there is no compelling reason to classify the Chrau particles as clitics.

It is also true that none of the particles seems to be able to occur in isolation. However, from Thomas' exposition it appears that only nouns and verbs can occur in isolation, so that free occurrence is not a good litmus for words vs. clitics in Chrau.

At least two facts favor the classification of the Chrau particles as independent words. The first of these is that a number of the particles are clearly morphologically complex. The final particle *vu de*, for instance, is an idiomatic combination of *vu* 'people' and *de* 'possessive particle' (Thomas, 189). By the complexity criterion (section 2.3.6), we expect these particles to be words rather than clitics.

The second fact is that the distribution of the final particles cannot be described by a single principle locating them at the end of a clause. The complication is that 'Part of the clause nucleus may be repeated (echoed) after the final particle for additional semantic emphasis' (Thomas, 102). We need to say that final particles combine either with a clause, or with a clause and an independent constituent (from Thomas' examples, the echoed constituent can apparently be a noun phrase, a verb phrase, or the two in combination, without any final particles).

The distribution criterion (section 2.3.5) then suggests that the particles are simply words.

I conclude that absolutely nothing about the phonology or syntax of Chrau indicates that the final particles form any sort of unit with the non-particle word preceding them. Similarly, nothing indicates that the initial particles form any sort of unit with the non-particle word following them.

4.2. Affixes rather than clitics[3]

The Siouan language Hidatsa is an SOV language with a set of morphemes, indicating moods, that occur only after V in main clauses. These mood markers are differently treated by Robinett 1955 and by Matthews 1965.

Matthews' description is in the early transformational framework; it has a set of phrase structure rules (introducing eight moods via the rule S ---> P Mood), a set of transformational rules (irrelevant to the issue we are considering here), and a set of rules introducing boundaries into syntactic structures. Matthews (Appendix B.1) describes this third set of rules as demarcating 'words', but he also says that the way strings are divided into 'words' can diverge considerably from the (surface) constituent structure, so that it is clear that this third set of rules, intervening between the transformational and phonological components, comprises what have come to be known as *readjustment rules*, creating 'phonological words' rather than the words of ordinary morphology. That is, Matthews is proposing that the mood markers are clitics, syntactically positioned at the end of an S and later readjusted to form phonological words with the V that precedes them. These are special clitics (they have no full forms in this position, or any other position), and from their meaning, S' clitics.

Robinett's analysis, on the other hand, is framed in terms of position-classes of affix morphemes. For her, the mood markers belong uncomplicatedly to a class of inflectional affixes including also such non-mood morphemes as *wa* 'as, when, at' and *hiri* 'because'.

Now Matthews' analysis, in which mood markers like Quotative *wareac*, Report *rahe*, and Emphatic *ski* are S' clitics located clause-finally, clearly runs against Kaisse's version of Wackernagel's Law, while Robinett's analysis of Hidatsa is consistent with Kaisse's proposal (the location of inflectional affixes has nothing to do with the placement of S' clitics). But which of the two is the right analysis of Hidatsa?

Consider the criteria that Zwicky and Pullum (1983a) provide to distinguish clitics from inflectional affixes, and the criteria they cite from other authors (Carstairs 1981 and Muysken 1981). Most of these criteria do not apply to the Hidatsa case, at least given what I know about the language. But not all are beside the point. Carstairs' third criterion--that inflectional affixes are 'members of a relatively small closed system, one of whose members must always appear at the relevant place in structure' (4)--fits the Hidatsa case perfectly, since the mood markers make a small (seven- or eight-member[4]) closed class, one of whose members must appear at a particular point in structure, namely at the end of every main clause. Zwicky and Pullum's first criterion--that 'clitics can exhibit a low degree of selection with respect to their hosts, while affixes exhibit a high degree of selection with respect to their stems' (503)--is consistent with an affix analysis, since the mood markers occur only after verbs; but since verbal clitics are common in the languages of the world, not much weight can be placed on this test.

The most striking evidence in favor of the affix analysis comes from Zwicky and Pullum's third criteion: 'Morphophonological idiosyncrasies are more characteristic of affixed words than of clitic words' (504). There are at least three types of morphophonological irregularities associated with the mood markers.

First, the Optative and Imperative markers 'Both combine with a preceding number morpheme...into the phonemic shape *aara*...Otherwise, after a nonhigh vowel that is not preceded by a nonhigh vowel,...[they] have the shapes *h* and *ka*, respectively; elsewhere their shapes are *ah* and *aka*, respectively (Matthews, 108). These morphophonemic conflations and alternations have no obvious parallel elsewhere within the language.

Second, the Report mood marker idiosyncratically fails to undergo (Matthews, 287) a morphophonemic rule raising *e* to *i* in morpheme-final position.

Third, at least one mood marker conditions morphophonemically irregular behavior in the stem to which it is attached: 'Under certain not-yet-understood conditions, a stem will move its stress to the final vowel when it is immediately followed by the Quotative morpheme' (Matthews, 286).

Finally, the phonological shape of at least one of the mood markers indicates that it is an affix rather than a clitic. Most of the mood markers have quite ordinary shapes, like Indefinite *toak* and Period *c*, but one, Question, has a peculiar phonological realization: as a glottal interruption of an immediately preceding vowel (Matthews, 101).

Now morphophonological processes like ablaut, umlaut, consonant changes, reduplication, accent shifts and tone alterations are fairly common as the phonological exponents of inflectional or derivational formations in morphology. Sometimes the processes cooccur with affixes (e.g. German umlaut with plurals in *-er*, as in *Blaetter*, from *Blatt* 'leaf'); sometimes they are the sole phonological exponent of a formation (e.g. German umlaut as the sole mark of plurality, as in *Brueder*, from *Bruder* 'brother'). Sometimes the proceses affect only a subtype of a formation (e.g. German umlaut in general, given that many plurals, like *Frauen* 'women', do not involve umlaut even though their noun stems have umlautable vowels); sometimes they occur across the board (e.g. the Tagalog 'contemplated-aspect' form of a verb, marked only and always by reduplication, as in *makikita* 'will see', from *makita* 'see' (Schachter and Otanes 1972: 363)). Parallel phenomena involving clitics or independent words are at least very rare, if not unexampled. Given that the Hidatsa Question morpheme is realized as a morphophonological process, it is most unlikely to be a clitic.

(Notice that here I am using a test to distinguish clitics from affixes that Zwicky and Pullum do not cite: Morphophonological processes normally function parallel to affixes rather than to clitics (or independent words).)

On balance, every criterion I have mentioned shows that the Hidatsa mood markers are inflectional affixes (after the fashion of Robinett's analysis) rather than clitics (in the spirit of Matthews' analysis).

4.3. Simple clitics rather than special clitics

Welsh presents a situation that, at first glance, seems to involve S' clitics in clause-initial position. The particles at issue in this VSO language include at least the affirmative particles *y(r)*, *fe*, and *mi*; the interrogative particles *a* and *ai*; the relative particle *a*; and the negative particles *ni(d)*, *na(d)*, and *nac*. From their functions, it is clear that if these particles are special clitics, they are S' clitics. The question is whether they are special clitics at all.

To explore this question, I must first sketch the syntactic properties of the Welsh particles. The particle *y(r)*[5] will serve as an illustration. It combines with a clause whose main verb is a form of *bod* 'to be':

Yr	*oedd*	*Jac*	*yma*	'Jack was here'
PRT	was	Jack	here	

Compare *A oedd Jac yma?* 'Was Jack here?' and *Nid oedd Jac yma* 'Jack wasn't here'.

The other afirmative particles, *fe* and *mi*, combine with clauses having main verbs other than *bod*, and they are optional, whereas *y(r)* is obligatory: **Oedd Jac yma*, but both *Mi ganodd Jac* and *Canodd Jac* 'Jack sang'.

Y(r) does not, however, combine with clauses that have a (fronted) topicalized constituent; the particle is instead in complementary distribution with a topicalized constituent: *Y bachgen oedd yma* 'It was the boy who was here', *Yma oedd y bachgen* 'It was here that the boy was', but **Yr y bachgen oedd yma* and **Y bachgen yr oedd yma*. The interrogative and negative particles are not so restricted; compare *Ai Jac oedd yma?* 'Was it Jack who was here?' and *Nid Jac oedd yma* 'It wasn't Jack who was here' with *Jac Oedd yma*. Note also that *y(r)* does not cooccur with *a*/*ai* or *ni(d)*.

For sentences with main verb *bod*, then, there are six things that can precede the verb: AFF, Q, NEG, TOP, Q TOP, and NEG TOP, where 'AFF' stands for the affirmative particle, 'Q' for the interrogative particle, 'NEG' for the negative particle, and 'TOP' for a topicalized constituent. A straightforward analysis of these facts would posit a Comp position preceding S, with two constituents in Comp:

$$\left(\begin{Bmatrix} \mathrm{Q} \\ \mathrm{NEG} \end{Bmatrix} \right) \qquad \begin{Bmatrix} \mathrm{AFF} \\ \mathrm{TOP} \end{Bmatrix}$$

(A transformational treatment would get the effect of complementary distribution between AFF and TOP by moving a topicalized constituent so as to replace AFF, but the details of how the positions in Comp get filled need not concern us here.) In this analysis, AFF has the allomorphs *y* and *yr* (depending on whether the following verb begins with a consonant or a vowel) when it is S'-initial, and a zero allomorph otherwise.

Such a straightforward analysis of the major Welsh facts is not possible if AFF is a special clitic, and if in addition the cliticization component is to follow all syntactic operations; a clitic element AFF would not be available in the syntactic component. Similar remarks hold for Q and NEG, and indeed for the other particles I have not discussed in any detail here. We must now ask why anyone should suggest that the Welsh particles are clitics, rather than independent words.

The first piece of evidence suggesting a clitic analysis is the restricted distribution of particles. But I have now amply illustrated the fact that items with restricted distributions are not necessarliy clitics.

The second piece of evidence is that the particles are usually unaccented. *Ni(d)*, *fe*, and *mi*, however, are easily accented for emphasis. And, in any case, the accentual criterion is one of the least reliable, as I pointed out in section 2.2.

What looks like the really conclusive piece of evidence comes from the phonological properties of AFF, NEG, and Q in colloquial Welsh speech.[6] Preceding forms of the verb *bod* (which are always vowel-initial), AFF and NEG are phonologically reduced and attached to the verb. *Yr oedd Jac yma* pronounced with a initial schwa is distinctly bookish; the colloquial version is *'R oedd Jac yma*, in which the first phonological word is /royð/. *Nid oedd Jac yma* pronounced with a full form *nid* is emphatically negative; the unemphatic colloquial version is *'D oedd Jac yma*, in which the first phonological word is /doyð/. In the same context, Q is simply absent. *A oedd Jac yma?* is distinctly bookish; the colloquial version is just *Oedd Jac yma?*, with rising final accent indicating its interrogative character.

Moreover, preceding verbs other than *bod*, Q and NEG are usually not realized as separate elements at all in colloquial Welsh. Instead, Q is manifested as a morphophonological rule, the 'soft mutation', affecting certain segments at the beginning of a verb following Q, and as a concomitant rising intonation on the sentence as a whole. And NEG may be realized via another set of morphophonological alterations ('soft mutation' of some consonants, 'aspirate mutation' of others) affecting the first segment of the verb following it, in combination with a negative marker *ddim* or *mo* later in the sentence. The colloquial version of *A ganodd ef?* 'Did he sing?' (cf. affirmative *Canodd ef* 'He sang') is *Ganodd ef?*, and the colloquial version of *Ni chanodd ef ddim* 'He didn't sing' is *Chanodd ef ddim*.

Both the facts about the particles preceding forms of *bod* and the facts about the particles preceding other verbs suggest a high degree of integration between the particles and the verb forms that follow them; indeed, the particles seem transparently to be clitics. (For at least some speakers of modern Welsh, one might even want to analyze some of the mutated verb forms as inflectional forms.)

For the many speakers who have full and reduced forms of the particles as formal/bookish and informal/colloquial veriants, it is clear that the reduced forms (AFF /r/, NEG /d/) are clitics. But they are *simple* clitics, occurring in the same position as the corresponding full forms.

The zero variants of Q and NEG can then be analyzed as zero allomorphs of simple clitics, an analysis that is especially attractive in light of the fact that the mutations appearing when there is no overt manifestation of Q or NEG are exactly those that occur with *a* or *ni(d)* is present: *(A) ganodd ef?*, *(Ni) chanodd ef*.

I conclude that the Welsh 'particles' are independent words (adverbs, presumably, though of a small and distributionally restricted class) with simple clitic variants.

5. *A real class of particles*

Despite all the cold water I have thrown on the notion of *particle* in the sections above, there *is* a grammatically significant class of words that have often been labeled 'particles'--namely the 'discourse particles', or 'interjections', as surveyed most recently for English by James (1974), Goldberg (1980), and Schourup (1983).

The English discourse particles include (certain instances of) *well*, *hey*, *ok*, *oh*, *yes*, *like*, *y'know*, *no*, *uh*, *now*, *say*, *why*, *look*, *listen*, and *please*, and perhaps others, as in the examples:

> *Kim will want, well/oh/like/uh/say/why, a golden penguin.*
> *Well/hey/ok/yes/y'know/look/listen, let's go to Pismo Beach.*
> *I'd like a pomegranate popsicle, please.*

(On distributional grounds, the traditional class of exclamatory 'interjections' in English--items like *ouch*, *boy*, *gosh*, *holy cow*, *wow*, *my goodness*, *dear me*, and *hell*--should also be grouped with these particles.)

Though these items are in some sense 'little words', they are not at all like clitics. Their kinship is, instead, with vocatives, appositive relatives, and interruptive adverbials like *I think*, *as you might have heard*, and *so they say*.

Unlike clitics, which are prosodically dependent, discourse particles and their kin are prosodically independent. Typically, they are both accented and prosodically separated from their surrounding context.

Though discourse particles are usually monomorphemic, they can be morphologically complex (*y'know* is probably still complex for most current speakers of English), and certainly the constructions related to them are complex, often having quite considerable internal structure (as in the parenthetical *as I ought to have realized you probably heard from Robin* or the vocative *all you people with both apples and oranges in your knapsacks*).

Unlike clitics, which form word-like units in combination with neighboring words, discourse particles and their kin are syntactically insulated from the rest of the sentences they occur in. Typically, the internal syntax of a discourse construct has nothing to do with the syntax of the sentence around it.

Finally, a point about meaning. Clitics express a variety of meanings; in addition to clitics indicating various arguments of a verb, modality, sentence type, negation, and so on, there are some that are really pragmatic/discourse markers, indicating the speaker's state of mind with respect to the content of what is said, the speaker's estimate of the speaker-addressee relationship, and the speaker's estimate of the role of the current sentence within a larger discourse. Discourse particles are _all_ pragmatic/discourse markers; they never supply arguments for predicates or act as operators on propositions.

The special characteristics of discourse particles have long been recognized. Traditional grammars of many languages distinguish a class of _interjections_, and detailed grammars based on distributional analysis (like Fries 1952 for English) must separate discourse particles from other function words. Fries' analysis, for example, has 15 classes of function words, among them Group K (_well_, _oh_, _now_, and _why_, very frequently occurring at the beginning of 'response utterance units', and more generally at the beginning of sentences continuing conversations (101)), Group L (_yes_ and _no_, distributed much as the items in Group K, but occurring as whole 'response utterances' and having a clearer meaning than the group K words (102)), Group M (_look_, _say_, and _listen_ as 'attention-getting signals' (103)), and Group N (_please_ occurring with request sentences, most frequently at the beginning (103)). These four classes of function words stand out very clearly against all the others, primarily because their distribution, in this very distributional grammar, is described in discourse terms, not in terms of their cooccurrence possibilities with other syntactic constituents.

I conclude that there is a place for a class of _discourse particles_ in general grammatical theory (and, undoubtedly, a place for many subclasses in the grammars of individual languages). Discourse particles, however, make up only a small part of the great world of 'particles', and they have nothing worth mentioning in common with clitics.

Footnotes

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[1] For an extended discussion of tests in linguistics, see Zwicky 1977a. In general, the linguistic literature has not been very clear about the distinction between definitional criteria and symptoms, possibly because scholars in general are so anxious to 'define their terms' properly. Nevertheless, lists of symptoms are always useful, and in the case of terms that function as theoretical primitives, _only_ lists of symptoms can be provided (this latter point can be seen as the main lesson of Johnson's 1977 critique of Keenan's 1976 'definition' of _subject_ in grammatical theory).

[2] Strictly speaking, this discussion should proceed in terms of _morphs_ rather than _morphemes_. An independent word can have a number of phonological forms--English /hæz həz æz əz/ representing the auxiliary verb _has_, for instance--and a clitic having one set of phonological forms can

alternate with an independent word having another--English clitic /z s z/ in alternation with the independent auxiliary *has*, for instance. Because of these phenomena, any discussion of the difference between clitics and words should be framed in terms of the classification of particular *morphs*, pairings of phonological form and lexical identity, and not in terms of any more abstract construct like *morpheme*. We will want to say that auxiliary /hæz/ is an independent word and that auxiliary /z/ is a clitic; we will want to avoid having to classify the auxiliary morpheme *has* as one or the other.

[3] The material in this section will appear in somewhat different form in the *International Journal of American Linguistics*.

[4] Eight, according to Matthews, who counts the homophonous Optative and Imperative separately.

[5] The particle *y(r)* is homophonous with, and historically derived from, the definite article *y(r)*. But it should be clear even from the few data I present here that there would be no justification for classifying the particle as a definite article in modern Welsh.

[6] The discussion that follows is based in part on my own field work on Welsh, and in part on the data in two teaching grammars--the 'bookish' grammar of Bowen and Rhys Jones (1960) and the 'colloquial' grammar of Rhys Jones (1977).

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Five Morphemes in Finnish: Possessive Suffixes or Anaphoric Clitics

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0. Introduction

Finnish has five morphemes that have presented analytic difficulties to both syntacticians and phonologists for years. These five morphemes have been referred to in the literature as "Possessive Suffixes" (henceforth *Px*, as is the traditional abbreviation in the field), "possessive" because of their association and cooccurrence with the genitive personal pronouns, and "suffixes" because of their status as a proper subpart of the word. I shall demonstate that the best approach to these morphemes is to describe them as *clitics*; my discussion brings together facts about the phonological and morphological behavior of the Px (few of which have been presented in a unified way in the literature) that point to cliticization. Then I shall examine the syntactic evidence and, taking into consideration a presentation by Pierrehumbert (1981), argue for two fairly simple clisis rules involving clitic doubling and clitic movement (as well as clitic adjunction).[1]

I will also argue that because they never occur without coreference to another noun phrase in the sentence, the Px are *anaphors*. (An apparent exception, in which the NPs referred to are (genitive) non-interrogative personal pronouns, turns out to fall under my generalization; these NPs undergo free deletion at a late stage in the grammar.) Finally, although I claim that the Px are (anaphoric) clitics, I point out how they differ systematically from other clitics in Finnish.

1. Phonological Facts

Any morpheme in this class behaves as if it were a proper subpart of the word, because it undergoes certain (morpho)phonological rules with the word as their domain, and because it prevents other (morpho)phonological rules from applying word-finally to stems. The Px must also be considered proper subparts of words for the reason that they are not phonotactically possible independent words. Instead, they are similar, or sometimes even identical, to well-formed suffixes of Finnish.

1.1. Word-internal sandhi[2] and phonotactics

No word begins with geminates in Finnish, though the first and second person plural Px do (-*mme* and -*nne*, respectively). Few words begin with consonant clusters, none with *ns*, but the third person Px (at least in its basic allomorph) is -*nsa* ∼ -*nsä*. Therefore the Px cannot stand alone as independent words. They are similar to case suffixes in form--1SG -*ni* and 2SG -*si* parallel the essive suffix -*na*; -*mme* and -*nne* are parallel to the allative case -*lle*; and the third person -*nsa* ∼ -*nsä* is similar to the translative -*ksi* and ablative -*lta* ∼ -*ltä*. The 1PL Px -*mme* is homophonous with the 1PL verb suffix -mme.

The Px undergo the (word-internal) phonological rule of vowel harmony. Since i and e are "neutral" with respect to harmony, only -nsA is relevant. (A is an archiphoneme representing the a ∼ ä alternation resulting from vowel harmony.) Thus we find -nsa in back vowel words:

kirja-nsa ∼ *kirja-nsä
book - 3
'his book'

(cf. kirja-ssa ∼ *kirja-ssä 'in the book')
book -INES

and -nsä in front vowel words:

kynä-nsä ∼ *kynä-nsa
pen - 3
'his pen'

(cf. kynä-llä ∼ *kynä-lla 'by pen')
pen-ADES

1.2. Word-external sandhi

The Px also behave like true suffixes insofar as they block three well-motivated morphophonological rules which affect final vowels of stems. First, there is a raising of word-final e to i. For example, lumi 'snow' is derived from an underlying //lume// (cf. the genitive singular lume-n). The Px on this and other words does not allow the e → i raising:

lume-ni ∼ *lumi-ni
snow-1SG
'my snow'

Another rule applying word-finally shortens ee to e. (Most word-final e's alternate with -ee-; the latter is considered basic here becdause it is less restricted in its occurrence than the nominative singular e# and the partitive singular -et-, and because it must be differentiated from the underlying e which raises to i. For a different approach to the selection of a basic allomorph see Karlsson (1983:185, 197).) The Px do not permit shortening of final ee:

herne 'pea'   NOM SG ← //hernee//
hernee-n   GEN SG ∼ *herne-n
hernee-nsä   'his pea' ∼ *herne-nsä

One last morphophonological rule is final vowel deletion (in some words). The following word can be motivated as having an underlying form //vanhuute//:

NOM SG vanhuus 'old age'
GEN SG vanhuude-n
ILL SG vanhuute-en
ES SG vanhuute-na

The Px permit neither final *e*-raising (as above) nor final vowel deletion:

Morphophonemic UR:	//vanhuute//	//vanhuute-ni//
e-raising	vanhuuti	*
ti → *si*	vanhuusi	----
vowel deletion	vanhuus	*
	/vanhuus/	/vanhuuteni/

The following words have consonantal stems for the NOM SG and PART SG, but vocalic stems for all other numbers and cases. It is not clear whether they involve the final vowel deletion needed above, or a vowel (*e*) insertion rule. Both approaches have been taken in the literature[3].

NOM SG	GEN SG	Morphophonemic stem
saapas 'boot'	saappaa-n	//saappasa-// or //saappase-//
kyynel 'tear'	kyynele-n	//kyynele//
manner 'continent'	mantere-n	//mantere-//
elin 'organ'	elime-n	//elime-//
neitsyt 'virgin'	neitsye-n	//neitsyte-//
lurjus 'rascal'	lurjukse-n	//lurjukse-//

The Px always take the vocalic stem; final vowel deletion fails to apply (or else *e* insertion before suffixes does apply): *saappaa-nsa* 'his boot', *kyynele-nsa*, *mantere-nas*, *elime-nsa*, *neitsye-nsa*, and *lurjukse-nsa*.

Thus the Px are clearly proper subparts of words. They have the status of suffixes because they undergo the morphophonological rule of vowel harmony and because, like suffixes, they do not permit the application of morphophonological rules affecting word-final vowels.

The Px *fail* to behave like proper subparts of words insofar as they do not undergo the following morphophonological rule. They do not trigger consonant gradation as some of them ought to, given their phonological shape. Consonant gradation "weakens" consonants in closed syllables. The Px -*mme*, -*nne*, and -*nsA* close the preceding syllable and hence should be expected to cause consonant gradation; but they do not. Compare, for example, the 1PL subject-verb agreement suffix with the homophonous 1PL Px:

lentä-ä	'to fly'
lennä-mme	'we fly'
lintu	'bird'
lintu-mme	'our bird' ~ *linnu-mme

The suffix -*mme* closes the syllable, triggering the *nt* → *nn* consonant gradation in 'we fly'; the clitic -*mme* fails to trigger consonant gradation in 'our bird' even though it, too, closes the syllable.

1.3. Truncation

The Px, unlike any other morpheme in Finnish (even other clitics), condition a truncation rule. Final consonants get deleted when immediately preceding a Px:

lintu-ni	←	lintu-ni NOM SG 'my bird' bird-1SG
	←	lintu-t-ni NOM PL 'my birds' bird-PL-1PL
	←	lintu-n-ni GEN SG 'my bird's, of my bird'

Since NOM PL t and GEN SG n otherwise cause consonant gradation, it is clear that this truncation takes precedence over consonant gradation (so as to avoid *linnu-ni in the NOM PL and GEN SG)[4].

If there is an e-insertion rule (as opposed to an e-deletion rule), then this rule takes precedence over truncation.

	//lampas-ni//		//lampas-ni//
truncation	lampa-ni	e-insertion	lampase-ni
e-insertion	---	truncation	---
	*lampani	other rules	. . . lampaa-ni

Essentially the point here is to avoid truncation of root-final consonants: lammas 'sheep', manner 'continent', elin 'organ', etc.

Truncation also affects the final consonants of the GEN PL, the ILL SG and PL, the INSTR, and the second infinitive (2INF):

GEN PL	lintu-je-n	'of the birds'
	lintu-je-ni	'of my birds'
ILL SG	lintu-un	'into the bird'
	lintu-u-ni	'into my bird'
ILL PL	huone-i-siin	'into the houses'
	huone-i-sii-ni	'into my houses'
INSTR	om-in voim-in own-INSTR strength-INSTR	'with one's own strength'
	om-in voim-i-ni	'with my own strength'
2INF	näh-de-n	'by seeing'
	näh-te-ni	'by my seeing'

2. Morphological facts

With respect to their ordering within words, the Px resemble clitics. However, with respect to allomorph selection, they behave, as in phonology, like proper subparts of words, both conditioning and exhibiting special allomorphy.

2.1. Linear ordering

The Px lie outside all derivational and inflectional morphology (e.g. case and number morphemes):

ma-i-ssa-mme
land-PL-INES-1PL
'in our lands'

syö-dä-kse-mme
eat-1INF-TRANS-1PL
'(in order) for us to eat'

The only morphemes permitted to follow the Px within he word are other clitics, for example the sentential operator clitics:

auto-lla-nsa-ko
car-ADES-3-Q
'by their car?'

Also permitted to follow is the directional adverb päin (a simple clitic or a leaner — note the absence of vowel harmony):

koti-i-nsa-päin (from Penttilä 1957:123)
home-ILL-3-direction
'in the direction of his home'

Thus, the Px can be seen as the first of the clitic string attached to the host.

2.2. Stem allomorph selection

The Px are not like other clitics in determining stem allomorphy. The other clitics attach to any (inflected) stem, with no special allomorphy, and do not have phonological effects as the Px did above.

lammas	'sheep (NOM SG)'
lammas-kin	'the sheep, too'
lammas-han	'the sheep, you know'
lampaa-lla-kin	'on the sheep, too'
etc.	

The Px, in contrast, require the oblique stem and cannot attach directly to the NOM SG stem ending in a consonant (as I remarked above):

lampaa-ni 'my sheep' ~ *lammas-ni

In the morphologically determined allomorphy of *-nen* ~ *-se-*, the Px attach to the basic *-s(e)-* allomorph, not to the NOM SG *-nen* (although the other clitics attach to *-nen*):

Suomalainen 'a Finn (NOM SG)'
Suomalainen-han, -pa, -ko, -kin, etc.
Suomalaise-si ~ *Suomalainen-se ~ *Suomalaine-si 'your Finn' (cf. GEN SG Suomalaise-n)

I conclude that for stem allomorphy selection the Px behave like proper subparts of words rather than like the less integrated particle clitics.

2.3 Px allomorphy

Some of the Px have unusual allomorphy. The first and second person plural *-mme* and *-nne* are invariable, but the other three Px have allomorphs that begin with vowels and end in consonants:

1SG -ni ~ -in
2SG -si ~ -is
3 -nsA ~ -Vn (where V repeats the final vowel of the host)

The vowel-final allomorphs are restricted variants, found only after suffixes ending in a vowel. (The exact statement of the allomorphy rule is difficult because the underlying shape of the partitive suffix is indeterminate.) Since the VC-allomorphs must follow a vowel, the NOM PL, GEN SG, GEN PL, INSTR, and 2INF suffixes do not cooccur with them.

The VC-allomorph also follows only a suffix, never a root, even if the root meets the phonological requirements. For example, the root *talo* 'house' ends in a vowel, but **talo-is* is not permitted, only *talo-si* 'your house'. It is also clear that only *inflectional* suffixes suffice to trigger the VC-allomorph; derivational suffixes do not. Thus in the three infinitives[5] and the two participles, the CV shape of the suffixes still does not permit a VC-allomorph for the Px, because the suffixes in question are derivational suffixes.

The VC-allomorphs, then, are found after inflectional affixes ending in vowels. There is, however, a further restriction on the occurrence of the VC-allmorphs. The problem lies in the partitive singular: the VC-allomorph of the Px is allowed after partitives in *-CA* and after certain *-A* partitives, but not after a root *-A* followed by the partitive *-A*. One solution to this problem is to posit a filter which rules out the configuration ...A_{root}] -A-[6] [VC_{Px}] (e.g. allowing *tila-a-nsa* 'his state (PART)' but not **tila-a-an*).

This well-formedness constraint is a morphological restriction on the cooccurrence of allomorphs. It cannot be strictly phonological, because sequences of three vowels do occur in Finnish, e.g. *raaka* 'raw' with genitive *raa'an* (note loss of *k* through consonant gradation). At the morphlogical level three vowels are likewise permitted (e.g. maa + i + ta 'land + PL + PART'), but they undergo a phonological rule which shortens the cluster (i.e. ma-i-ta 'lands (PART PL)'). Pertti Pyhtilä (p.c.) has suggested that the constraint is one of syllabification, since a form like raa'an consists of two syllables, but *tila-a-an and *tila-a-in would consist only of two, not three, syllables.

In all forms the basic (C)CV-allomorphs are possible, but whenever the VC-allomorphs are available they are preferred. The reader is referred to Appendix II for a list of relevant forms.

Note that the Px allomorphy rule interacts with the truncation rule of section 1.3 in a counterfeeding manner. The consonant truncation rule potentially feeds the VC-allomorphy, yet it does not. This interaction falls out of a theory in which all morpholexical rules (e.g. VC-allomorphy) take precedence over all morphophonemic rules (e.g. truncation):

	//talo-on-nsa//		//talo-on-nsa//
TRUNCATION	talo-o-nsa	TRUNCATION	—
ALLOMORPHY	talo-o-on	ALLOMORPHY	talo-o-nsa
	*/talooon/		/taloonsa/

2.4. Summary of morphophonological facts

The following is a summary of the ordering of the morpholexical and morphophonemic rules discussed thus far. Lines indicate relevant crucial interactions; other interactions are left undetermined.

MORPHOLEXICAL: -nen ~ -s(e)- allomorphy
allomorphy of Px

MORPHOPHONEMIC: (e- insertion)
Truncation
(e-deletion)
various vowel assimilations:
s → h /V_V, h → Ø ...
e# → i#
ti → si
Final Vowel Deletion, ee# → e#
Consonant Gradation
Vowel Harmony

The Px, for the most part, behave like proper subparts of the word—they condition stem allomorphy as well as several word-internal sandhi rules. With the exception of Consonant Gradation and Truncation, the Px are functionally the same as suffixes for the purposes of morphology and phonology.

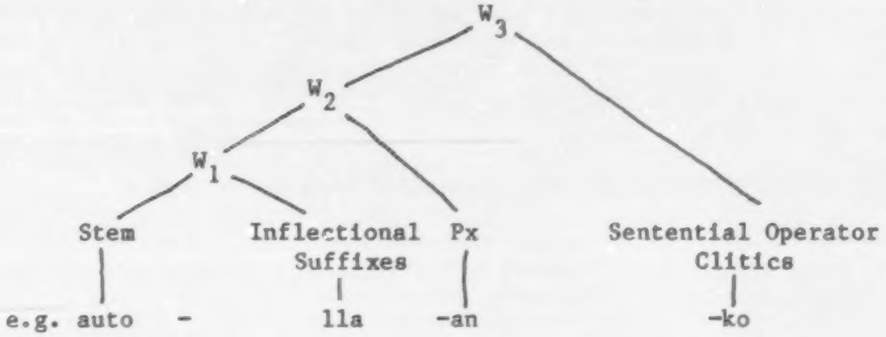
3. The status of Px in the word

The Px have an intermediate status between the inflectional suffixes and the sentential operator clitics. They are like the former insofar as (a) they are person and number markers (often redundant markers), (b) they condition a free deletion rule affecting pronouns, and (c) they condition similar allomorphy for the stem:

Inflectional Affix: (Me) toivo-mme 'we hope'
1PL Px: (Meidän) toivo-mme 'our hope'

The Px are like the sentential operator clitics in that (a) they lie outside all inflectional and derivational morphology in their attachment to the host, and (b) they fail to cause Consonant Gradation.

The Px must be kept distinct from both the inflectional suffixes and the sentential operator clitics because of the phonological and morphological idiosyncrasies presented above. For these reasons I tentatively posit a special place in the internal morphological structure of the Finnish word for the Px:



'by their car?'

The various morpholexical and morphophonemic rules can refer to the different levels of the word. Consonant Gradation, for example, has a domain of W_1, thereby appropriately excluding the effect of the Px. Vowel Harmony has a domain of W_3, thus including the Px and the sentential operator clitics. The stem allomorphy rules apply at level W_2.

Below I shall present some further evidence that the Px cliticization rules follow the late syntactic rules that assign and percolate inflectional features and that they precede the rules that place and attach sentential operator clitics (and the leaner päin 'direction').

The Px cliticizations take precedence over the cliticizations of the sentential operator clitics for three reasons. First, the Px always appear closer to the host than do the other clitics.

auto-lla-an-ko ~ *auto-lla-ko-on
car-ADES-3-Q
'by their car?'

Being closer to the host, the Px interact more frequently with the host for the purposes of morphology and phonology than do the other clitics. They are therefore more likely to lexicalize (cf. section 5.1.5.).

Second, the semantic domain of the Px is smaller than that of the sentential operator clitics: the Px operate at the phrase level, the sentential operator clitics at the sentence level. The principle of "smaller, then larger" predicts this interaction.

A third reason is that the Px clisis rules are syntactically much like agreement and case marking rules, in that they mark features that play a role elsewhere in the syntax of the language. The sentential operator clisis rules merely determine the placement of morphemes. In this regard, the Px cliticizations point to a "clitic as feature complex" analysis, but the sentential operator cliticizations point to a "clitic as word" analysis. One possibility is that the feature-type cliticization universally takes precedence over the word-type cliticization.

At any rate, the Px cliticizations are sandwiched between the inflectional rules and the other cliticizations.

4. Stylistic facts

The Px are used mostly in formal Finnish. Colloquial Finnish has them in numerous lexicalized forms (mainly adverbs). This explains why the comitative case requires a Px: it is used in formal styles. Colloquial language prefers instead the postposition kanssa 'with':

Formal Finnish:	mies vaimo-ine-en man wife-COM-3 'a man with his wife'
Colloquial Finnish:	mies vaimo-n kanssa man wife-GEN with 'a man with his wife'

That the Px are stylistically marked is no problem for the analysis of these five morphemes, since their crucial syntactic interactions involve constructions that are equally marked. The relevant syntactic constructions include nonfinite verb phrases and preposed (adjectivized) relative clauses, both of which are quite formal in style.

5. Syntactic facts

The Px are clearly proper subparts of words. They represent person and number features on nominals, and as morphological features, might be expected to be assigned as inflectional features. But they cannot be considered inflectional affixes for the reasons detailed above. In addition, they fail to behave like other inflectional morphemes in the language in that they fail to undergo agreement rules. Other features associated with the NP node in Finnish (e.g. case and number) regularly show agreement (Karlsson 1977).

5.1. Host requirement

In place of full NP agreement, the Px attach only to the head of a nominal phrase,[7]

minun pieni sininen kirja-ni
my little blue book-1SG
'my little blue book'

*minun piene-ni sinise-ni kirja-ni
(cf. minun piene-ssä sinise-ssä kirja-ssa-ni
'in my little blue book')

in fact, only to certain heads of nominal phrases. They will not attach to adjectives in general; Hakulinen and Karlsson (1979:129) provide the following examples, in which an adjective is stranded as the head of an NP:

*Minä vien nämä kaksi laukkua-ni, ota sinä minun muu-ni.
I take these two bag-1SG take you my other-1
'I'll take these two bags of mine, you take my others'

*Jos sinä otat ruman solmio-si, minä otan kaunii-ni.
if you take ugly ring-2SG I take pretty-2SG
'If you take your ugly ring, I will take my pretty one.'

*Kun me olemme syöneet sinun kakku-si, jäjellä
when we have eaten your cake-2SG after

on vielä hänen kolme-nsa
is still his three-3
'When we have eaten your cake, there are still his three
leftover'.

Exactly what can serve as the head of an NP for the purposes of cliticization is far from clear. Nouns can, but adjectives in general cannot. Some adverbs accept Px, as do certain nominalized verbs and most postpositions.

5.1.1. Adjectives as host

There are some exceptions to this statement. Hakulinen and Karlsson (1979:129) mention *oma* 'own' and the "mensual" adjectives (adjectives showing mass or comparison): *arvoinen* 'of value', *kaltainen* 'resembling', *mittainen* 'measuring', *veroinen* 'equal', etc. Pierrehumbert (1981:603) offers the following example:

Kaltaise-kse-en Jumala loi ihmisen.
like -TRANS-3 God made man
'God made man like himself.'

This subgroup of adjectives also shows different syntactic behavior from the other adjectives, insofar as they cannot appear alone, but must govern some *preceding* NP (or an enclitic Px, as above). Most adjectives modify a following noun and do not participate in government in this way. Hakulinen and Karlsson (1979:137) provide further examples of adjectives of this class:

kuolema-n oma
death-GEN own
'death's own, belonging to death'

karhu-n näköinen
bear-GEN looking
'(looking) like a bear'

metri-n mittainen
meter-GEN measure
'a meter long, a meter's length'

kulla-n arvoinen
gold-GEN valuable
'the value of gold, worthy of gold'

Thus, this class of adjectives seems more nominal than the prototype adjective.

It also appears possible for adjectives ending in the "independent" suffix *-nen* (a derivational suffix) to accept Px (Hakulinen and Karlsson 1979:129):

?Jos otat vihreän solmio-si, niin minä otan punaise-ni.
if take green ring-2SG then I take red-1SG
'If you take your green ring, then I'll take my red one.'

Punainen in this sentence seems to accept the Px more readily than *kaunis* 'pretty' did in parallel sentence above. This is probably because the *-nen* suffix is an old diminutive that is attached to form both adjectives and nouns; in some instances the word class is ambiguous. Again, the *-nen* adjectives give the impression of being more nominal than regular adjectives.

tyttö : tyttönen
girl little girl

rauta : rautanen
iron (N) ferrous, iron (ADJ)

suomi : suomalainen
Finland, Finnish language Finn, Finnish (ADJ)

Adjectives in the superlative and comparative accept Px more readily than their positive equivalents. The comparative and superlative are derivational suffixes attached to the adjectives.

(from Hakulinen and Karlsson 1979:129)
pukeutua parhaimpi-i-nsa
to dress best-ILL-3
'to get dressed in his best (clothes)'

(from Penttilä 1957:123)
Sauna on kuum-immi-lla-an.
sauna is hot-SUPER-ADES-3
'The sauna is at its hottest.'

Kohtasin parempa-ni.
I met better-1SG
I met my better.'

Also "exceptional" is kaikki 'all' (Hakulinen and Karlsson 1979:129):

Hän teki kaikke-nsa asian hyväksi.
he made all-3 thing good-TRANS
'He did his all to make the thing good.'

As far as I can tell, these uses of kaikki plus Px are adverbial in nature. There are numerous other adverbs in the form of ADJ + CASE + Px:

hyvillä-än 'delighted, glad, pleased' (cf. hyvä 'good')
pahoilla-an 'displeased, sorry, badly' (cf. paha 'bad')
yksinä-än 'alone' (cf. yksi 'one')
ainoasta-an 'only, merely' (cf. ainoa 'sole')
kokona-an 'entirely' (cf. koko 'entire, whole')

These usually form adverbs of manner. It is frequently these adverbs that lack person and number agreement, appearing in the unmarked Px, the third person, e.g. (from Penttilä 1957:126)

Elämme erillä-än (~ erillä-mme) maailmasta.
we live differently-3 -1PL world-EL
'We live differently from the world.'

A reasonable view of these adverbs is that they are lexicalized in the form of ADV + Px or even $_{ADV}$[ADJ+CASE+Px], with the Px determined by the sentence, or in the absence of that determination, by the unmarked 3 Px.

Returning now to the adjectives, Hakulinen and Karlsson (1979:129) and Pierrehumbert (1981:608) mention that verb forms in the third infinitive can be used as the head of an adjective phrase. The nonfinite verb acts as a true adjective by agreeing with the head noun. The agent of the verbal action appears in the genitive, preceding the verb, and therefore is a possible source fo Px. A Px may indeed occur on the 3INF verb: (from Pierrehumbert 1981:610)

Pidämme $_{ADJP}$[osta-m - i -sta-mme] tuole-i-sta.
we like buy-3INF-PL-EL-1PL chair-PL-EL
'We like the chairs we bought.'

To summarize this discussion of adjectives: Although adjectives in general do not accept Px, there exist several types of adjectives which can or must take a Px. These can be seen to be much more nominal than the prototype adjective. Some of the apparent adjective phrases appear lexicalized as adverbials, rather than as productive syntactic units.

5.1.2. Nominalized verbs as hosts

There are several other non-finite verbal forms that accept Px. All of them are nominalized forms of some sort (with the 1INF -tA, 2INF -te-, 3INF -mA-, and the "temporal" -ttu-) which are, or can be, inflected for case. The first infinitive -tA also has a "long" form with the translative case which requires a Px (e.g. juos-ta-kse-en '(in order) for him to run'∼ *juos-ta-ksi without Px). The second infinitive has only two forms, both of which require a case ending, either the instrumental (juos-te-n 'by running') or the inessive (juos-te-ssa 'in running, while running'). The third infinitive has several inflected forms, but only the "agentive" (= adjectival use, above) and the abessive (juokse-ma-tta(-an) 'without (his) running') accept the Px. The other inflected third infinitives apparently lack the appropriate syntactic sources.

Finally, the "temporal" construction in -ttu- has only one form, the partitive:

```
saavu- ttu - a  - an      'his having arrived'
arrive-IMPER-PART-3
       PAST
       PRTC
```

This form, Hakulinen and Karlsson (1979:389) argue, is lexicalized and not generated by regular rules of Finnish, since its syntactic source would have two deeper subjects: the impersonal -ttV- and the genitival pronoun that becomes the Px. Elsewhere in the language, Px and impersonals cannot cooccur (for the reason that subject pronouns and impersonal forms do not cooccur). Also, the meaning of the temporal construction is not impersonal, but personal. Note, however, that although this construction is argued to be lexicalized, the partitive -a- must be retained as a discrete unit because it satisfies the conditions necessary for the VC-allomorphy rule (see section 2.3).

All of the verbal forms mentioned in this section act as nominals: adjectives, adverbials, and infinitival heads of embedded S-clauses.

5.1.3. Adpositions as hosts

Px can also attach to most postpositions:

```
minun ympäri-llä-ni         'around me'
my    around-ADES-1SG

minun ympäri-lle-ni         '(to) around me'
my    around-ALL-1SG

minun ympäri-ltä-ni         'from around me'
my    around-ABL-1SG
```

They do not attach to prepositions, since these govern partitive NPs (not a source for the Px). And there are some postpositions that do not accept the Px; these either have partitive NPs or do not accept any person, number, and case morphemes at all. Postpositions requiring a preceding genitive NP, but not having inflected forms, do not accept Px, e.g.

läpi 'through'
ohi 'past' (but *minun ohi-ni ~ minun ohi 'past me')

Striking is the difference between the inflected postposition luokse- 'to the side of' and luo ibid., the latter being without inflection:

(minun) luo-kse-ni 'to me' ~ minun luo 'to me'
* minun luo-ni

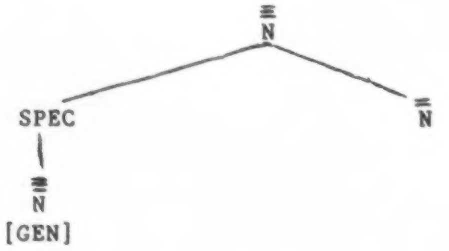
5.1.4. Adverbs as hosts

Finally, there are a number of lexicalized adverbs that accept Px. These take the form of NOUN + CASE + Px and are treated in the same manner as the adverbs mentioned above (with the form ADJ + CASE + Px), e.g.

koto-na-ni home-ES-1SG	'at my home'	(cf. koti 'house')

5.2. Syntactic source for Px

The distinction between adverbials, postpositional phrases, noun phrases, and even non-finite verb phrases and adjective phrases is often blurry (Hakulinen and Karlsson 1979:154). They all share the property of being nominals and having case. Under Jackendoff's (1981:54) X-bar treatment, nominals are the same as N'' and share the N''' node with a specifier. In the constructions under consideration, this specifier is always filled with a genitive NP.



The syntactic source for the Px is clearly a genitive pronoun in specifier position. For the purposes of syntax the Px behave as if they preceded the host NP and were genitive pronouns. In this position the Px condition such rules as object case marking.

In the framework of strict autonomy to which I adhere, all syntactic rules take precedence over all cliticization rules, which in turn precede all of morphology and phonology. Thus the Px have their origin as genitival pronouns, and after syntax, cliticize onto their hosts so that the components of morphology and phonology may refer to the various levels of the word, including that level containing the Px (see Nevis 1981:fn. 6

for details).

Note that the syntactic source is before the host, but the morphological/phonological location is after (enclitic to) the host. This is characteristic of all clisis rules in Finnish. The separation of the syntactic and morphophonological facts about clitics (elaborated by Klavans (1980)) falls naturally out of a theory of autonomous components.

5.3. Pierrehumbert's analysis

Pierrehumbert (1981) uses Jackendoff's X-bar framework to capture relevant facts about the syntactic behavior of the Px. She argues that the syntactic source of the Px in Finnish is a genitival, reflexive pronoun in specifier position in X'''. She does not have to refer to N''' specifically, but assumes that this rule applies to verb phrases, adjective phrases, and sentential clauses.

Genitival, reflexive pronouns not in specifier position cannot act as a source for Px:

Minun täytyy lähteä.   'I must leave.'
my   must   leave

*minun täytyy-ni lähteä

Sinun kiusaamise-n täytyy loppua.
your teasing-GEN must   stop
'Your teasing (=teasing of you) must stop.'

*Sinun kiusaamise-si täytyy loppua.

Sinu-n Mati-n   kutittamise-n täytyy loppua.
you-GEN Matki-GEN tickling-GEN must   stop
'Your tickling of Matti must stop.'

~Sinu-n Mati-n kutittamise-si täytyy loppua.

In the last example, sinun 'your' is in specifier position (as the subject of the nominalized verb here) and is allowed to be a source for the Px -si. The other examples have genitives, but they are not in specifier positon; rather, they are acting as objects or indirect objects. For this reason the genitive pronouns in the first two examples above cannot act as source for a Px.

Pierrehumbert is particularly interested in arguing that the Px are not simply copied agreement markers of a genitive specifier and that they are "allomorphs" of the reflexive pronoun. In particular, she argues against a traditional (but unarticulated) analysis whereby genitive pronouns in attribute positon get copied and adjoined to the head of the phrase. In some instances the independent genitive pronoun can be deleted. Pierrehumbert exemplifies this in her (33):

(33) Hänen$_i$ hermostumisen Jorma$_i$ unohti.
his loss of nerve Jorma forgot

copying and adjunction:

Hänen$_i$ hermostumise-nsa$_i$ Jorma$_i$ unohti.

deletion under coreference:

∅ Hermostumise-nsa$_i$ Jorma$_i$ unohti.

'His loss of nerve Jorma forgot.'

5.3.1. Anaphora facts

Pierrehumbert is also concerned with the conditions relevant to deletion under coreference. This deletion is optional only for first and second person pronouns, and only in APs, PPs, and NPs. In participles (she calls them VPs), either a genitive pronominal subject appears or a Px, but not both. (The numbering of examples is taken directly from Pierrehumbert 1981).

1) a. Sanoin pitä- vä - ni siitä.
I said like-PPRC-1SG it
'I said I like it.' (lit. 'I said my liking it.')

*Sanoin minun pitä-vä-ni siitä.
my-GEN

(but cf. Sanoin hänen pitä-vä-n (*-nsä) siitä.
'I said his liking it.')

The third person pronoun has obligatory coreference deletion under identity with some other NP, obligatory retention under nonidentity:

He tulevat (*heidän) auto-lla-an.
they come their car-ADES-3
'They are coming in their (own) car.'

He tulevat heidän (*∅) auto-lla-an
they come their car-ADES-3
'They are coming in their (someone else's) car.'

Contrary to the above situation of deletion under coreference, only personal pronouns are found in the doubled construction; inanimate and interrogative pronouns are never found doubled (o).

(6) a. Rahasumma vieläkin odottaa (*sen) omistajaa-nsa
money still awaits its owner-3
'The money still awaits its owner.'

Sen omistaja (*-nsa) on munkki.
its owner -3 is monk
'Its owner is a monk.'

Finally, first and second person genitive pronouns can occur without coreference to another NP, but the third person cannot.

(7) Serkku-ni kanssa on aina hauskaa.
cousin-1SG with is always nice
'With my cousin one always has a nice time.'

(8) *Serkku-nsa kanssa on aina hauskaa.
cousin-3 with is always nice
'With his/her cousin one always has a nice time.'

In this section I have mentioned the complexities of the occurrence of the Px and their genitival pronominal sources. A distinction is to be made between the doubled construction (see section 5.4.3) and the coreference construction (section 5.4.2).

5.3.2. Pierrehumbert's arguments

Pierrehumbert's first argument that the Px are allomorphs of reflexive itse 'self' is that the Px are reflexive in reference. Her second argument is that the Px are in complementary distribution with the reflexive morpheme itse with respect to specifier position. She posits the following "allomorphy" rule:

(30)

$$\begin{array}{c}\text{PRO}\\ \begin{bmatrix}\text{+ reflexive}\\ \text{+ genitive}\end{bmatrix}\end{array} \begin{array}{l}\longrightarrow \text{POSS} \,/\, {}_X\ldots[\text{(article)}\underline{\quad\quad}\\ \longrightarrow \underline{\text{itse}} + \text{case} + \text{POSS} \,/\, \text{elsewhere}\end{array}$$

And then Pierrehumbert has a cliticization rule:

(31)

$$\begin{array}{lllll} {}_X\ldots[\text{(article)} & \text{POSS} & \text{Y} & \text{head} & \\ 1 & 2 & 3 & 4 & \text{--->}\ 1\ 3\ 4\text{+}2\end{array}$$

Pierrehumbert suggests that it is possible that the "allomorphy" rule, her (30), is governed entirely by syntactic factors and has no lexical exceptions. This would be a surprising sort of allomorphy rule. But in fact it is not a true allomorphy rule--it does not determine the shape of allomorphs (or even morphemes), and so seems to be some sort of syntactic rule. Since it manipulates syntactic features, one would expect syntactic conditions, and not lexical exceptions. Even if one considers the Px as reflexive clitics, clitics typically combine into lexicalized units less easily than proper subparts of words, in particular, inflectional affixes, do; see Zwicky and Pullum 1983.

Now it is apparent that Pierrehumbert is dealing with a late syntactic rule that alters morphosyntactic features (rule 30) and a clitic adjunction rule that determines the placement of the Px (rule 31). These two rules are in the proper order for a syntactic and a cliticization rule: the syntactic rule precedes the clisis rule.

Pierrehumbert still has to account for the appearance of "doubled" forms, as in her (40-43), so she posits a "doubling" rule (57).

(40) Sinun hermostumise-si Jorma unohti.
your(GEN) loss of nerve-2SG Jorma forgot
'Your loss of nerve Jorma forgot.'

(41) Tuo puku sopii $_{A'''}$[sinun ikäise-lle-si] naise-lle.
that dress suits your age-ALL-2SG woman-ALL
'That dress suits a woman of your age.'

(42) Pidämme $_{A'''}$[sinun osta- m - i-sta-si] tuole-i-sta.
we like your buy-3INF-PL-EL-2SG chair-PL-EL
'We like the chairs you bought.'

(43) Jorma valitsi Marin sinun sijalle-si.
Jorma chose Mari your in place of -2SG
'Jorma chose Mari in place of you.'

(57) "Doubling Rule"

$$
\begin{array}{ccccccc}
[{+}N]_{'''}[(\text{article}) & \begin{bmatrix} \text{pronoun} \\ +\ \text{human} \\ -\ \text{interrogative} \\ -\ \text{reflexive} \\ \text{etc.} \end{bmatrix} & & & & & \\
1 & 2 & \longrightarrow & 1 & 2 & 2 \\
 & & & & [+\ \text{refl.}] &
\end{array}
$$

This rule must feed rule (30) so as to get the right results:

(57) "Doubling"
(30) "Allomorphy"
(31) Cliticization

But doubling of pronouns, especially of pronouns that will end up as clitics, is usually captured in a clitic copying rule. Now we have the following schema:

(57) Clitic Copying
(30) Syntactic Feature Manipulation
(31) Clitic Adjunction
later "Unemphatic Pronoun Drop"

With this reinterpretation, we have an apparent malordering for the autonomous components framework: A syntactic rule is sandwiched between two cliticization rules.

5.3.3. Criticisms

This malordering is avoidable, however. I believe, first of all, that Pierrehumbert's "Allomorphy" rule is wrong. Complementary Distribution arguments are not used very often in syntax, and, even so, this one fails. The reflexive *itse* and the Px do cooccur to a great degree. The only apparent place they cannot cooccur is in the specifier position, where *itse* does not occur at all. Using this argumentation, Pierrehumbert could just as easily have called the Px allomorphs of some reflexive verb, since such verbs do not occur in specifier positon either. Notice that *itse* 'self' and the Px cooccur in nearly any overtly reflexive form:

itse-lle-si
self-ALL-2SG
'to yourself'

The *itse* morpheme is indicating reflexive meaning here, and the Px *-si* is marking person and number for that reflexive reference (as well as redundant reflexive meaning).

Furthermore, the statement of (57) is rather *ad hoc*. Pierrehumbert has to force a feature change from [- reflexive] to [+ reflexive] in the personal pronouns in order to make them undergo rules (30) and (31).

Pierrehumbert does succeed in presenting an analysis in which the doubling of pronouns is distinct from the cliticization involved in the other uses of the Px. It turns out that no Px ever occurs without coreference to another NP (before the free deletion of first and second person pronouns). Thus all Px are anaphors: They have no independent reference, but take their reference from some antecedent (Radford 1981: 364). (The only exceptions to this statement come from the lexicalized forms mentioned in section 5.1.[8])

Pierrehumbert attempts to capture these facts in her rules, but ends up with *ad hoc* descriptions, connecting the reflexive *itse* morpheme with the person and number clitic markers. I will connect them, too, but in a less direct manner; they are both anaphors.

5.4. Revised analysis

Following a description of Chomsky's Semantic Interpretation Rules outlined by Radford (1981), I will present an account of the Px which falls out of Chomsky's Binding Conditions. This will require that an indexing rule (assigning an index to every NP in a sentence) precede cliticization. It will not matter to my analysis where exactly the Semantic Interpretation Rules go in the grammar, so long as they precede cliticization. For the purposes of this paper I will follow Chomsky's model, in which they follow Case Rules (surface syntax) and Transformational Rules (relational syntax) (Radford 1981:363).

5.4.1. Binding

Radford distinguishes three types of NPs (1981:364-7): anaphors, pronouns, and lexical NPs. An anaphor has no independent reference, but is "bound" in its "governing" category (i.e. must refer to another N within the clause). A pronoun either takes its reference from some other NP or refers independently, and it must be "free" in its governing category if it has one. A lexical NP refers independently and is "free" everywhere.

He also has an indexing rule that assigns every NP an index through which any random pair of NPs can be either coreferential or noncoreferential (Radford 1981:366). In addition there is a Matching Condition that requires NPs assigned the same index to agree in person and number features. This latter filter rules out a sentence such as

*Minä$_i$ sanoin pitä-vä-nsä$_i$ siitä.
I said like-PPTC-3 it
'I said himself liking it.'
cf. Minä sanoin hänen$_i$ pitä-vä-nsä$_i$ siitä.
'I said his liking it'

because the Px -nsä is anaphoric and must refer to another NP, minä, but does not agree in person with it. But the following sentence is acceptable, since the anaphor -ni is coindexed for its c-commanding NP minä and agrees in person and number with it:

Minä$_i$ sanoin pitä-vä-ni$_i$ siitä.
I said like-PPTC-1SG it
'I said I like it. (I said my liking it.)'

The Px are anaphoric because they are coindexed with a c-commanding argument (i.e. bound) and because they always agree in person and number with that argument (which must be a clausemate of the anaphor). In all the following sentences, offered by Pierrehumbert (1981:603), the anaphor is coindexed with a clausemate, c-commanding NP, and agrees with it in person and number:

He$_i$ tulevat $_{NP}$[auto-lla-an$_i$].
they come car-ADES-3
'They are coming in their (own) car.'

$_{AP}$[Kaltaise-kse-en$_i$] Jumala$_i$ loi ihmisen.
like-TRANS-3 God made man
'God made man like himself.'

$_{PP}$[Lähellä-än$_i$] Jorma näki käärmeen.
near-3 Jorma saw snake.
'Near himself Jorma saw a snake.'

Since in the majority of cases the Px is coreferent to a subject NP, it follows that no Px can attach to a subject NP. The only exceptions come from the first and second person doubled constructions discussed below. In all the third person instances, the 3 Px refer to subject NPs and lack a genitival antecedent in specifier position, e.g.

> *He$_i$ tulevat heidän$_i$ autolla-an$_i$.
> they come their car-ADES-3$_i$
>
> He$_i$ tulevat autolla-an$_i$.
> they come car-ADES-3$_i$
> 'They are coming in their (own) car.'

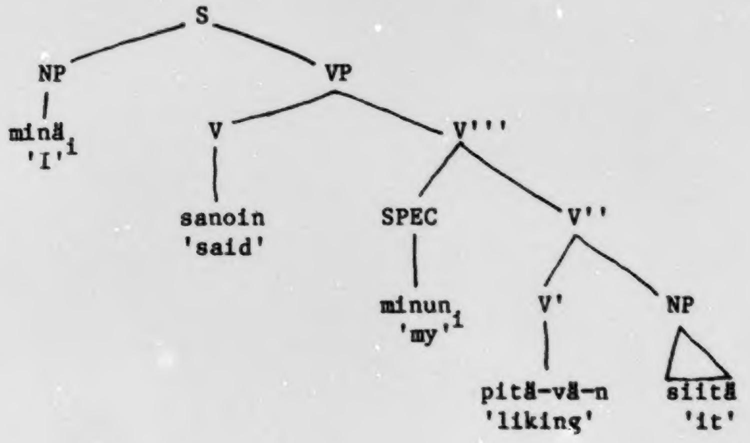
When a genitival pronoun appears in specifier postion, the Px is not coindexed with the subject NP:

> He$_i$ tulevat heidän$_j$ autolla-an$_j$.
> 'They are coming in their (someone else's) car.'

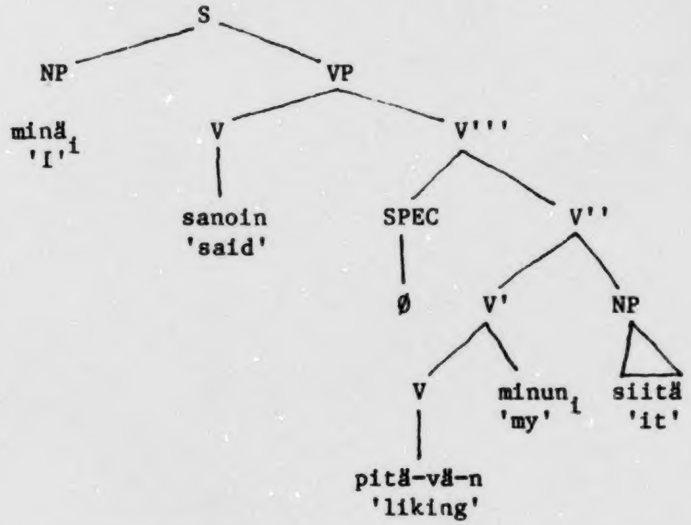
5.4.2. Clitic Movement

To handle the subject-coreferent third person Px, I posit a clitic movement rule that takes a coreferent genitive pronoun and moves it to a spot after the head of an X'''. For example, in the participial structure, which requires a coreferent genitive, the coreferent clitic movement takes a morpheme minun$_i$ out of SPEC position and attaches it to the head word pitä-vä-n.

Before Cliticization:

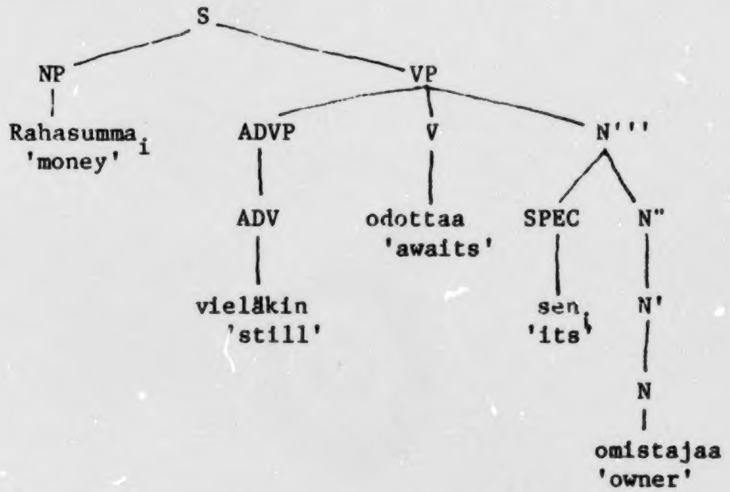


After Cliticization:


S
NP
VP
minä$_i$
'I'
V
V'''
sanoin
'said'
SPEC
V''
Ø
V'
NP
V
minun$_i$
'my'
siitä
'it'
pitä-vä-n
'liking'

Allomorphy the selects a Px allomorph instead of a genitive pronoun.

The same holds for the structure


S
NP
VP
Rahasumma$_i$
'money'
ADVP
V
N'''
ADV
odottaa
'awaits'
SPEC
N"
vieläkin
'still'
sen$_i$
'its'
N'
N
omistajaa
'owner'

in which the pronoun sen$_i$ will be cliticized onto the head of its NP, omistajaa. Being third person, this morpheme will be realized as -nsA or -Vn:

> Rahasumma$_i$ vieläkin odottaa (*sen) omistajaa-nsa$_i$.
> 'The money still awaits its owner.'

Lexical NPs are never moved via this rule, because they are never coreferent to c-commanding, governing NPs:

Mati-n vaimo
Matti-GEN wife
'Matti's wife'

*Mati-n vaimo-nsa
*vaimo-nsa

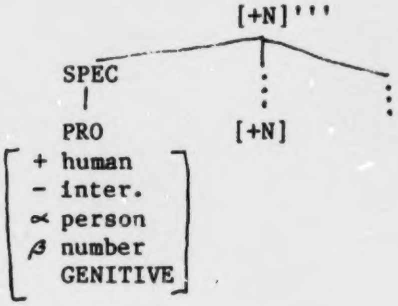
5.4.3. Clitic doubling

The clitic movement rule is not satisfactory for first and second person pronouns or for noncoreferent third person pronouns, because they can appear in a phrase alongside their Px:

minun talo-ni
my house-1SG
'my house'

meidän talo-ssa-mme
our house-INES-1PL
'in our house'

I treat the doubled constructions differently from the movement constructions. For the doubled clitics, I posit a copying rule that copies person and number features from the SPEC positon. This rule is restricted to postpositional, adjectival, and noun phrases. It is never possible to double a genitive pronoun with a verb (i.e. from a V''' SPEC). So, following Pierrehumbert (1981:617), I will restrict this cliticization to [+N]. The structure to which copying applies is



The copying rule then reproduces the person and number features of a genitive noninterrogative human personal pronoun on the head of the [+N]''', namely [+N].

Interrogative and inanimate pronouns must be ruled out in copying because of the following examples (from Pierrehumbert 1981:615):

kene-n vaimo ~ *vaimo-nsa
who-GEN wife wife-3
'whose wife'

se-n omistaja *omistaja-nsa
it-GEN owner owner-3
'its owner'

5.4.4. Rule interaction

How do the two cliticization rules interact? The movement rule has to take precedence over the copying rule in order to bleed it, and to prevent the copying of coreferent third person pronouns.

UR	He$_i$ tulevat heidän$_i$ autolla
	they come their car-ADES
COPYING	He$_i$ tulevat heidän$_i$ autolla-an$_i$
MOVEMENT	(not applicable)
SURFACE	*He$_i$ tulevat heidän$_i$ autolla-an$_i$.

UR	He$_i$ tulevat heidän$_i$ autolla
MOVEMENT	He$_i$ tulevat Ø autolla-an$_i$
COPYING	(not applicable)
SURFACE	He tulevat autolla-an.
	'They are coming in their (own) car.'

The copying rule could be modified by the addition of the feature [-coreferent] or some other feature (as Pierrehumbert 1981:616 does). But if the coreferent movement cliticization applies first, then the copying rule need not even be restricted to [+N]''', but can be more general, applying to X'''. The V''' instances are all coreferent structures, and the lack of doubled constructions here will fall out of the rule interaction.

It is interesting to point out that Radford (1981:364-5) says that pronominals "can either take their reference from some other NP (this is called their anaphoric or proximate use), or they can refer independently (this is called their deictic or obviative use)" [parentheses and emphasis his]. It is in this latter function that the personal pronouns undergo the clitic copying rule.

5.4.5. Comparative evidence for separation of rules

There is some evidence to suggest that the separation of the two cliticization rules is the correct approach. In neighboring languages and dialects, the Px are less productive or even entirely unproductive. They generally have two disparate functions: as vocatives and as reflexives. This is the situation in Lappish (Collinder 1957:194) and Votic (Ariste 1968:57), and apparently was the situation in Estonian in an earlier stage of the language. The vocative use of the Px corresponds to the clitic copying rule in Finnish, and the reflexive use corresponds to the coreference movement cliticization.

Collinder's view of the Lappish Px as "enclitic possessive pronouns"

(1957:193) suggests that a system of anaphoric clitics should be reconstructed for Common Finnic (ca. 1000-500 B.C.), complete with the clitic copying and clitic movement rules. Finnish, and to a lesser degree Lappish, would then be conservative in retaining this system.

5.4.6. Summary

I have discussed the following rules:

Chomsky's Semantic Interpretation Rules (Indexing, Matching Conditions, Binding Conditions, etc.)
Coreferent Clitic Movement
Clitic Copying (of noninterrogative personal pronouns)

It is crucial that the Semantic Interpretation Rules take precedence over the cliticization rules and that the clisis rules are premitted reference to their indexing.

5.5. Free deletion

One final fact needs to be accounted for, and this is the optional deletion of first and second person genitive pronouns in the doubled construction:

(minun) serkku-ni kanssa
my cousin-1SG with
'with my cousin'

Generally the genitive is retained if it is emphasized; otherwise it is dropped. Pierrehumbert points out the parallels with the dropping of the nominative first and second person subject pronouns:

(Minä) mene-n kotiin.
I go-1SG home
'I am going home.'

Again, the subject pronoun is retained under emphasis, otherwise dropped. The parallel is striking when one considers the fact that in neither free deletion is the third person pronoun deleted. In all likelihood the two deletions ought to be combined into one rule at a fairly late stage in the grammar (e.g. morphology).

6. Conclusion

I have argued that the Possessive Suffixes of Finnish are neither possessive nor suffixes, but anaphoric clitics that are derived through one of two clisis rules: (i) clitic movement and (ii) clitic copying of a genitive pronoun in specifier position.

Syntactically the Px behave like full genitival pronouns, conditioning case marking rules and undergoing Semantic Interpretaton Rules. Morphologically the Px are part of the word, conditioning a free deletion rule, allomorphy rules, and several morphophonemic rules, and undergoing the phonological rule of Vowel Harmony. They do not, however, condition Consonant Gradation, and therefore are not as closely associated with the stem as are regular inflectional affixes. (See Appendix III for a list of all the rules discussed in this paper.)

I have categorized clitics in Finnish into at least two classes: the Px and the sentential operators. These two types of clitics operate on different domains and behave divergently in their morpholexics and morphophonemics. The Px are most compatible with a "clitic as feature" analysis whereas the sentential operators are most compatible with a "clitic as word" analysis. The former take precedence over the latter.

I have also made the claim that Semantic Interpretation Rules must precede cliticization in Finnish, and now speculate that this claim is to be generalized to all languages.

This analysis, then, incorporates the insights of Pierrehumbert's approach--separating the cliticization of coreferent pronouns from the copying of noninterrogative noncoreferent personal pronouns, and recognizing the parallel between the genitive and nominative free deletions of first and second person pronouns--but avoids the malordering and ad hoc qualities of Pierrehumbert's treatment.

APPENDIX I. List of abbreviations.

NOM - nominative
GEN - genitive
PART - partitive
ES - essive
TRANS - translative
INES - inessive
EL - elative
ILL - illative
ADES -adessive
ABL - ablative
ALL - allative
ABES - abessive
INSTR - instrumental
COM -comitative
1INF - first infinitive
2INF - second infinitive
3INF - third infinitive
PL - plural
SG - singular
IMPERS - impersonal
PPTC - past participle
PRTC - present participle

APPENDIX II. Chart of Px allomorphs (excluding the nominative singular).

		Suffix ending in -V	Other suffixes
SG	GEN	*	talo-nsa
	PART	talo-a-an	talo-a-nsa
	INES	talo-ssa-an	talo-ssa-nsa
	EL	talo-sta-an	talo-sta-nsa
	ILL	*	talo-o-nsa
	ADES	talo-lla-an	talo-lla-nsa
	ABL	talo-lta-an	talo-lta-nsa
	ALL	talo-lle-en	talo-lle-nsa
	ES	talo-na-an	talo-na-nsa
	TRANS	talo-kse-en	talo-kse-nsa
	ABES	talo-tta-an	talo-tta-nsa
PL	NOM	*	talo-nsa
	GEN	*	talo-je-nsa
	PART	talo-j-a-an	talo-j-a-nsa
	INES	talo-i-ssa-an	talo-i-ssa-nsa
	EL	talo-i-sta-an	talo-i-sta-nsa
	ILL	*	talo-i-hi-nsa
	ADES	talo-i-lla-an	talo-i-lla-nsa
	ABL	talo-i-lta-an	talo-i-lta-nsa
	ALL	talo-i-lle-en	talo-i-lle-nsa
	ES	talo-i-na-an	talo-i-na-nsa
	TRANS	talo-i-kse-en	talo-i-kse-nsa
	ABES	talo-i-tta-an	talo-i-tta-nsa
	COM	talo-i-ne-en	talo-i-ne-nsa
	INSTR	*	talo-i-nsa

	Suffix ending in -V	Other suffixes
VERBS:		
1INF	*	%juos-ta-nsa
1INF (TRANS)	juos-ta-kse-en	juos-ta-kse-nsa
2INF (INSTR)	*	näh-te-nsä
2INF (INES)	juos-te-ssa-an	juos-te-ssa-nsa
3INF	*	juokse-ma-nsa
3INF (ABES)	juokse-ma-tta-an	juokse-ma-tta-nsa
TEMPORAL	juokse-ttu-a-an	juokse-ttu-a-nsa
ACT. PRES. PART.	*	juokse-va-nsa
ACT. PAST PART.	*	juos-see-nsa

APPENDIX III. Rule ordering and interaction.

Grammatical Component	Rules
SYNTAX	
SEMANTIC INTERPRETATION	Indexing Matching Conditions Binding Conditions
CLITICIZATION	Clitic Movement Clitic Copying Sentential Operator Clitic Placement
MORPHOLEXICS	-*nen* ~ -*se*- Allomorphy Px Allomorphy Free Deletion of First and Second Person NOM and GEN Pronouns
MORPHOPHONEMICS	(*e*-insertion) Truncation (*e*-deletion) e# → i# Final Vowel Deletion, ee# → e# Vowel Harmony Consonant Gradation

Footnotes

[1] The analysis of the Px as clitics is not controversial or innovative. Many scholars have recognized the special status of these morphemes; thus, Collinder (1965:40) uses the term "enclitic", and the Finish term *liite* in *omistusliite* 'possession clitic, Px' can be translated as 'clitic' (cf. Hakulinen and Karlsson (1979:73,90), among others). However, many earlier scholars failed to recognize the clitic status of the Px (among them Hakulinen (1961:78-81)), and many who do recognize this status do not explore the topic in any detail (e.g. Hakulinen and Karlsson 1979:section 7.4.2).

Setälä (1960:87-8) and Lindén (1959) mention the division of the Px into two rules, so that Pierrehumbert cannot, historically, be said to be the orginator of this distinction. But she has significantly contributed to the explicitness with which the rules are stated.

[2] Many of the rules described here and in section 1.2 are morphological in nature (cf. Karlsson 1982). However, the tradition in the generative framework (which I follow in this paper) treats these rules as (morpho)phonological. Their character is still a matter of some controversy; see, for example, Campbell (1975) about the epenthesis/deletion of *e*.

[3] See Campbell (1975) for a discussion of the two approaches to the insertion/deletion of *e* and for arguments in favor of *e*-deletion. Karlsson (1983), however, has *e*-epenthesis as a part of his morpholexical consonant alternations.

[4] The rule ordering established here is dialect-particular. In the Iitti dialect as described by Mark (1923) and Lindén (1959), the ordering is reversed: Consonant Gradation takes precedence over Truncation. As a result, the NOM PL and GEN SG have "weak" stems rather than the "strong" stems of the standard dialect. Thus one finds the following (partial) Px paradigm:

	NOM SG	NOM PL	GEN SG
1SG	tupa-m	tuva-in	tuva-in
2SG	tupa-s	tuva-ns	tuva-ns
1,2PL	tupa-nne	tuva-nne (~ tupa-nne)	tuva-nne

Note the different allomorphy of the singular Px--1SG *-m* and 2SG *-s* in the NOM SG, elsewhere 1SG *-in* and 2SG *-ns*. Two example derivations are given below:

2SG-GEN SG:		//tupa-n-ns//
	CONSONANT GRADATION	tuvan-ns
	TRUNCATION	tuvans
		/tuvans/
1SG-NOM PL:		//tupa-t-in//
	CONSONANT GRADATION	tuvat-in
	TRUNCATION	tuvain
		/tuvain/

[5] The Px on the first infinitive is not permitted in Standard Finnish, according to Hakulinen and Karlsson (1979:344), but Penttilä (1957:122) mentions "poetic" *juostansa* 'his running' and *lähteänsä* 'his leaving'. Such forms are presumably also found dialectally.

The morphological rule that selects the VC allomorph after the CV of the suffix must refer exclusively to inflectional suffixes, as is shown by the 1INF and 3INF, which satisfy the CV suffix condition (-*tA* and -*mA*, respectively), but nonetheless do not accept VC allomorphs, e.g. **juostaan*, **lähteään* (Penttilä 1957:122) and **puhumaan* 'speaking'. Such a morphological condition (CV in an inflectional suffix) would then automatically exclude the NOM SG, since it is suffixless.

[6] The solution to this problem will parallel, if not coincide with, the solution to a similar problem in the selection of the partitive singular allomorphs, -*A* ~ -*tA*. Under certain conditions -*A* is selected (e.g. *talo-a* 'house'); under other circumstances -*tA* is selected (e.g. *suu-ta* 'mouth'); and in addition, -*A* and -*tA* are permitted as alternatives in disyllables ending in a sequence of two vowels (e.g. *vaalea-a* ~ *vaalea-ta* 'light, fair'). However, if the two vowels are identical, i.e. if they constitute a long vowel, then only -*tA* is allowed. Thus *vapaa* 'free' has a partitive singular *vapaa-ta*, not **vapaa-a*.

[7] It is clearly the head nominal to which the Px appends, and not merely the right margin (as in Klavans' (1980) framework), even though the head of a nominal phrase is usually the rightmost branching member. This is clear from relative clauses which follow the head:

vanhempi veli, joka lyösi tytön...
older brother who hit girl
'the older brother who hit the girl...'

such a relative clause the head, *veli*, does not come at the right margin the phrase, but in the middle. Nevertheless the Px attaches to *veli*, t to the rightmost element, *tytön*:

minun vanhempi velje-ni, joka lyösi tytön...
my older brother-1SG who hit girl
'my older brother who hit the girl...'

*minun vanhempi veli, joka lyösi tyttö-ni...

[8] The reflexive morpheme *itse* is also anaphoric and also has coreference to a c-commanding clausemate NP. Since it, too, must agree in person and number with its antecedent, this is another source for the Px.

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